

Apocalypse Doctor

Medicine at the End of the World



A Resource Guide for Learning Dystopian
Medical Arts and Sciences

2026

PNWFOG

Important Notice and Disclaimer

While we have been conscientious in the preparation of this manual, it is not meant to offer professional medical advice. The information in this manual is not intended to authorize or train you to diagnose or treat disease nor to prescribe medications of any type.

If you need medical care, seek the counsel of a qualified physician or other licensed healthcare provider.

The intent of this manual is to provide access to credible sources of information (i.e. the CDC, NIH, WHO) for the

Apocalypse Doctor

Practicing Medicine at the End of the World.

The resources listed herein will provide you with information and training to become a better health advocate in your community, but are not intended to license or authorize you to in any way practice medicine prior to the Zombie uprising.

In other words, this manual is for information, educational, and entertainment purposes only!

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Medicine at the End of the World

At the end of the world there are no modern hospitals, pharmacies are few and the chemist has but meager drugs available to treat your illness. Without access to antibiotics, bacterial infections make even a simple cut or an abscessed tooth potentially life-threatening. Lack of vaccines mean that infectious diseases, such as measles, mumps, diphtheria, and tetanus would again spread through communities. Tuberculosis (TB), HIV/AIDS, and malaria become common. While dengue, schistosomiasis, leishmaniasis, and lymphatic filariasis are also highly prevalent. Poor sanitation and lack of access to clean drinking water leads to the spread of cholera and typhoid fever. Limited healthful foods result in malnutrition and diseases like scurvy and beriberi. If you are injured, a serious laceration, a broken bone, a burn, there is no ambulance to come get you and even if there was, there is no hospital to take you to for treatment.

Trained physicians and nurses are not available. Sure, there are still doctors and nurses somewhere in the world, but they are not near you. You've heard that there is a clinic, a field hospital, operating in the next district – but that is days away and maybe it's just a rumor. Even if the clinic existed and you could get there, would you be seen, is there a cost for treatment, do they even have the ability to treat you?

Does all of this sound like dystopian fiction, some kind of “prepper” fantasy? Sadly, in many parts of the world these conditions are all too real. Remote and isolated communities have no access to medical care, or at best are living in a very limited-resource and austere environment.

Even if you currently live in a modern and functioning city, with access to healthcare just minutes away, there are those who warn that

a failure of critical infrastructure could send us back to the dark ages. In October 2017, the Task Force on National and Homeland Security, Secure the Grid Coalition, and other partners published A Call to Action for America that began with a predicted 30-day scenario following the failure of the national power grid, a scenario that could lead to the death of 90% of the American population. (That scenario is included in an appendix to this manual.) Is such a scenario likely? Perhaps not, but there are serious organizations that warn that it is at least a possibility.

In 2021, the World Health Organization published A Guidance Document for Medical Teams Responding to Health Emergencies in Armed Conflicts and Other Insecure Environments (commonly called the 'Red Book') in which they stated: *“Conflict and war have a catastrophic effect on the health and well-being of nations and have evolved considerably over recent decades. As a result, a significant rise in humanitarian crises, including urban violence, means more people are affected for longer periods with disruption in the delivery of basic services a dire reality. Health interventions and innovative approaches in responding to the challenges of humanitarian crises have the potential to save lives and lessen the impact of conflicts on civilians.”* But they also warned that: *“Medical teams working in armed conflict and other insecure environments frequently face serious threats to their security and safety. Such challenges need to be overcome in order to access patients, with teams sometimes having to deal with limited acceptance by the communities in which they work and parties to the conflict.”*

You may not live in a war or conflict zone today, but there are those who do. The Russian invasion of Ukraine has resulted in the verified deaths of at least 13,883 civilians, including 726 children, with

over 35,500 injured, as of August 2025 according to the United Nations Human Rights Monitoring Mission.

As of 6 January 2026, over 72,437 Palestinians have been reported killed in the Gaza war according to the Gaza Health Ministry (GHM), with the majority of casualties resulting from Israeli military actions including airstrikes, siege, and ground operations. It is estimated that 80% of Palestinians killed are civilians, and a study by the United Nations Office of the High Commissioner for Human Rights (OHCHR) found that 70% of those killed in residential buildings were women and children. A peer-reviewed analysis in The Lancet estimated 64,260 trauma-related deaths by June 2024, suggesting the official count may underrepresent the true toll by up to 41%, not accounting for deaths from disease, malnutrition, or lack of medical care. Israel has destroyed or severely damaged every hospital in Gaza during its military operations since October 7, 2023. On April 13, 2025, an Israeli airstrike on the Al Ahli Arab Hospital in Gaza City, destroyed the last fully functional hospital in the city, thereby denying any sort of real medical care to the sick and injured in Gaza.

In countries with long-term conflict, such as Somalia, access to healthcare remains severely limited, particularly in rural and conflict-affected areas. In 2026, less than 30% of the Somali population had access to healthcare services. But it does not take a state of war for people to lack access to medical care. A March 2025 article, From Past to Present: Tracing Africa's Path to Universal Health Coverage, published in the National Library of Medicine (PMID: 40124416), reported that 'access to medical care in African countries remains a significant challenge, with less than half (48%) of the population able to access essential healthcare services.'

But you don't have to live in a war zone or wait for a total collapse of the national power grid to face a lack of access to medical care. An April 2025 paper Improving Health and Health Care in Rural Communities: A Position Paper from the American College of Physicians (<https://doi.org/10.7326/ANNALS-24-0357>) reported that over 90% of rural counties in the United States face a shortage of primary care physicians, and 65% of rural counties lack a practicing psychiatrist.

Remote communities in Alaska and northern Canada (especially in Nunavut and the Northwest Territories) face extreme challenges in accessing medical care due to vast distances, harsh weather, and limited infrastructure. Many villages are only accessible by air or boat, with no roads connecting them, making emergency and routine care difficult and costly.

Even in large cities, 73% of homeless individuals report at least one unmet healthcare need, including medical, mental health, dental, or prescription care, due to systemic barriers. Key factors reported in this lack of access to medical care included lack of health insurance (60% of homeless individuals are uninsured), inability to afford medications, lack of transportation, long wait times, and stigma or discrimination from healthcare providers.

In 2024, veterans (military retirees) reported that they were being denied access to Joint Base Lewis-McChord (JBLM) in Washington State and thus were denied access to medical care at the Madigan Army Medical Center (MAMC), the on-base hospital. It appears that this denial of access to medical care at MAMC was in retaliation for these veterans having reported serious misconduct by senior personnel in the JBLM Directorate of Emergency Services

(DES) / the JBLM Police Department. That denial of access to on-base emergency medical care, crisis counseling and suicide prevention resources was still happening when this guide was published in 2026.

Federal law, 10 USC Section 1074 & 1076 states that dependent family members and military retirees must be granted access to military installations to receive any medical care to which they are entitled, yet that access is being denied at JBLM. Even with a major medical center located in your community, a hospital in which you are entitled to receive medical care and treatment, you can still be denied access to that care when corrupt government officials are willing to ignore the law and retaliate against whistleblowers, homeless veterans and minority populations in the community.

Regardless of the circumstances, be it a failure of critical infrastructure, living in a war zone, lack of medical facilities in rural and remote communities, or denial of access to medical care by corrupt government officials; if you can't see a physician when you are sick or injured you will have to seek alternative sources of healthcare, provide your own care, or suffer with pain and illness and hope that your condition improves on its own as opposed to becoming worse.

This manual is intended to provide you with options for alternative medical care, and to provide you with resources, knowledge, and training so that you will be able to advocate for and help support the health and well-being of members of your community when access to other medical services is unavailable.

Barefoot Doctors

On June 26, 1965, China's Mao Zedong issued a directive criticizing the urban-biased healthcare system and calling for medical services to focus on rural areas. This directive led to the establishment of the barefoot doctor program. Barefoot doctors were healthcare providers who underwent basic medical training and worked in rural villages in China. They included farmers, folk healers, rural healthcare providers, and recent middle or secondary school graduates who received minimal basic medical and paramedical education. Their purpose was to bring healthcare to rural areas where urban-trained doctors would not settle. They promoted basic hygiene, preventive healthcare, family planning, and treated common illnesses. The name comes from southern farmers, who would often work barefoot in the rice paddies, and simultaneously worked as medical practitioners in the villages of rural China.

Barefoot doctors, as a formal title and system, was officially abolished in 1985 during the China's medical reforms, which shifted from collective, state-supported healthcare to a more market-oriented model. However, the legacy of barefoot doctors lives on through village doctors (*xiangcun yisheng*), who continue to provide essential primary and preventive healthcare in rural areas. These practitioners are the successors to the original barefoot doctors, many of whom passed national exams to become certified village doctors after 1985. Today, over 1 million village doctors serve rural communities across China, maintaining a focus on preventive care, maternal and child health, and disease surveillance. While their training and status are now more formalized, they still operate at the grassroots level, often combining traditional and Western medicine—just like their predecessors.

Street Medics

Street medics are volunteers with basic first aid training, supplemented by specific crisis-related medical training, who provide medical and wellness care at protests, demonstrations, disasters, and to underserved communities. Some street medics are fully qualified physicians, nurses, and paramedics, although most, at least in the beginning, start with just a 20-hour street medicine course followed by working side-by-side with a more experienced street medic.

Street medics originated in the United States during the Civil Rights Movement and anti-war movement of the 1960s. Street medics may treat trauma and injuries resulting from police violence, animal attacks, and ailments resulting from crowd control weapons and chemical agents like tear gas and pepper spray. They may also provide care for general well-being, as well as for other critical health events such as heat stress, cold exposure, or seizures.

Street medics are also frequently involved in operating free clinics. These clinics are set up to provide free healthcare to underserved communities, particularly where mainstream healthcare services are either inadequate or inaccessible.

While it is obviously impossible for the layperson to safely and competently deal with every medical problem and there remain many complicated diagnoses requiring equally complicated or technically advanced treatments, for 80% - 90% of the health problems afflicting humanity, simple things done well are all that is required to preserve life and limb and to help alleviate suffering.

According to the University of Southern California Keck School of Medicine (2022) --

- Street medicine is an important access point for people of color, with 25% of street medicine patients identifying as Black and 23% identifying as Latino.
- The majority of street medicine programs provide primary care services. More than two-thirds diagnose and treat mental health conditions and substance use disorders, with 60% providing medication-assisted therapy.
- Nearly all street medicine patients are insured, with at least 57% having Medicaid and 14% having Medicaid and Medicare.

Street medics often operate in a legal gray area, and their status depends on jurisdiction and specific circumstances. Street medics are generally not licensed medical professionals like physicians, nurses, or paramedics (although some are), they typically work under Good Samaritan laws, which protect individuals who voluntarily assist others in emergencies without expecting compensation. This is frequently the case where street medics are providing medical care to victims of police violence at protests and demonstrations.

When police or military decide to use violent crowd control tactics, ambulances and other resources may not be allowed to enter what authorities declare an “unsecured scene.” (Remember, calling 911 activates medical services and police!) Even when available, in the middle of a protest treatment and / or transport by EMS professionals may give authorities greater ability to identify, detain or arrest protesters. In contrast, street medics usually share sympathies with protest participants and may work directly with protest organizers and other as well as EMS infrastructure. This often gives street medics

greater access and motivation to help in situations where EMS workers are unavailable, uncomfortable, or unwanted. Shared anti-oppression attitudes and other principles may also make street medics and clinicians the preferred choices for those who feel alienated or endangered by corporate / state-controlled medicine. Street Medics also generally share a strong emphasis on consent, mutual aid, patient-oriented care, confidentiality, and non-cooperation with police. (Rosehip Medic Collective, 2011)

When operating free clinics and providing care to underserved communities, street medics may be registered as community health workers or traditional health workers, working under the direction of a licensed physician. Alternatively, they may work independently or as part of social groups.

The Rosehip Medic Collective, in their booklet Alternatives to Emergency Medical Services (2011) wrote about the work of the Emma Goldman Youth and Homeless Outreach Program (EGYHOP) stating: “Every evening in Olympia, Washington, EGYHOP volunteers go out on bikes with trailers to do exactly this [bringing direct service items and resources to the homeless and low income populations living on the streets or who self-identify as part of the street]. An ad-hoc group of volunteers and coordinators ensure that medical and hygienic supplies are available for nightly runs. Beyond simply distributing resources, EGYHOP volunteers are intent on being “a friendly and familiar face to talk with” for people who are often treated in dehumanizing ways by police and service providers. Volunteers see EGYHOP as a form of mutual aid, rather than charity. This is reflected in EGYHOP’s non-uniformed and relatively informal approach, and in the way [that] volunteers go to and cultivate relationships with people on the streets.”

Guerrilla Medicine

“Guerrilla medicine is a term used to describe medical practices and treatments carried out in unconventional, often resource-limited settings, typically outside of traditional healthcare facilities. This type of medicine is particularly relevant in situations such as armed conflicts, natural disasters, remote areas, or communities with limited access to standard medical care. The key characteristics of guerrilla medicine include adaptability, improvisation, a focus on critical interventions, mobility, and a public health approach.” (Aebhric OKelly, What is Guerrilla Medicine? 29 November 2023)

Guerrilla medicine usually involves:

Care outside formal systems

- Clinics, hospitals, and ambulances may be destroyed, controlled by the regime, or unsafe to use.
- Care often shifts to homes, underground facilities, mobile teams, or community networks.

Civilian-centered reality

- Most patients are civilians: children, elderly, pregnant people, detainees, displaced populations.
- Fighters are treated, but they are rarely the majority of medical need.

Resource scarcity

- Limited supplies, medications, electricity, clean water, or trained personnel.
- Emphasis on improvisation, prioritization, and prevention.

Security constraints

- Medical workers and patients may be targeted.
- Providing care itself can be treated as a crime by the regime.
- Confidentiality, concealment, and trust are survival issues.

Groups involved in guerrilla medicine usually have a limited public presence – for obvious reasons – but the following examples provide some idea of these groups' ideologies and activities.

The Paradoxcx (<https://www.theparadocx.com/>) is a collaboration of US Special Operations medics advising and training in Tactical Medicine and Irregular Warfare medical capabilities. Our mission is to optimize team and individual responses in high-risk situations with limited resources, bridge underground medical networks and decentralized supply chains to effectively address global public health challenges. Based in Washington State, they offer multi-day consultation and training programs worldwide that are customized to meet your specific needs.

Prolonged Field Care Working Group

(<https://prolongedfieldcare.org/>) provides medical support to irregular warfare. Medical support to irregular warfare refers to the organization and delivery of health care in environments where conflict is non-conventional, fragmented, and often conducted by resistance movements, insurgents, or civilian populations living under repression rather than by formal state militaries. It is the practice of keeping fighters and civilians alive, functional, and resilient when there is no reliable state health system and when access to formal medical care is denied, criminalized, or weaponized by an oppressive regime.

Guerrilla medicine is about resilience, survival, and legitimacy in environments where oppression has made normal healthcare impossible.

10 Essential PFC Capabilities

	1. Monitoring	2. Resuscitate	3. Ventilate and oxygenate	4. Control the Airway	5. Sedation and Analgesia	6. Physical Exam and Diagnostics	7. Nursing and Hygiene	8. Surgical Interventions	9. Telemedical Consult	10. Package and Prepare for flight
Minimum	BP Cuff, Stethoscope, Pulse Ox, Foley	Fresh Whole Blood Kit	Bag-Valve-Mask with PEEP Valve	Awake Ketamine Cric	Opiate Analgesics titrated through IV	Physical Exam without advanced	clean, warm, dry, padded, catheterized	Chest tube, cric	Make comms, present patient and key vitals	Be familiar with stressors of flight
Better	Capnometry	2-3 cases of LR for Burn Resus	O2 Concentrator	Long duration sedation	Sedation with Ketamine/option of midazolam	Ultrasound and point of care labs	Elevate head of real bed/bride, washout NG/OG	Fasciotomy debridement, amputation	Add labs and ultrasound video	Trained in critical care transport
Best	Vital Signs Monitor	PRBS, FFP, Type specific donors	Portable Ventilator	Proficient in Rapid Sequence Intubation	Educated and practiced multi drug sedation	Experienced and trained in above	Experienced in all nursing care concerns	Trained and experienced in above	Real time video conference	Experienced in critical care transport
Ruck	Pulse Ox, Head Lamp	1 FWB Kit per man, 2 250cc bag NS	BVM with PEEP Valve	Cric Kit, LMA/SGA, lidocaine and ketamine IM	Fentanyl TML, Perc PO, Ketamine IM/IV	Urinalysis test strips, fluorescein strips	Compact Foley kit, Sterile kerlix, litter padding	Cric, 10g Needle D Scalpel	Cell Phone and call sheet	Have checklist available
Truck	BP Cuff, Stethoscope, capnometry, small monitor	Casre LR, Additional FWB Kits, 3% Saline	SAVent or SAVE 2	RSI, LMA/SGA, Cric kit ketamine bag IV	Ketamine IV with midazolam	Blood tubes to drop off labs on the way	Padded litter, NG,	Sterile Chest Tube Kit with drapes	Cell phone and call sheet, sat phone, radio	Checklist plus flight evac kit
House	Add defibrillation	2 additional cases LR, Case NS, Additional 3% Saline	Impact Vent and O2 bottle	All from above Add Benzo if not available for truck	Same as above	Blood tubes to run labs to local clinic	Real mattress with head elevated, nursing care kit sleeping bg	Sterile Surgical Kit with Drapes, Gowns and scrub soap	Secure comms, email	Extensive evac kit
Plane	Take all of above	All of above	Impact vent on O2	All above calculate for flight and double	All above calculate for flight and double		Padded Litter, Sleeping Bag	10g needle D Chest tube kit Cric kit	Through aircraft	From Above

Community Herbalists

The Herbalists' Charter Ordained by Henry VIII, 1543

Be it ordained, established and enacted, by Authority of this present Parliament, That at all Time from henceforth it shall be lawful to every Person being the King's subject, having Knowledge and Experience of the Nature of Herbs, Roots and Waters, or of the Operation of the same, by Speculation or Practice, within any part of the Realm of England, or within any other of the King's Dominions, to practice, use and minister in and to any outward Sore, Uncome Wound, Aposelmations, outward Swelling or Disease, any Herb or Herbs, Ointments, Baths, Pultess, and Emplaisters, according to their Cunning, Experience and Knowledge in any of the Diseases, Sorea and Maladies before said, and all other like to the same, or Drinks for the Stone, Strangury or Agues, without suit, vexation, trouble, penalty or loss of their goods.

A community herbalist is a practitioner who uses herbal medicine to support the health and well-being of their local community, often focusing on accessibility, education, and empowerment. They typically draw from traditional, folk, and modern knowledge of plants, emphasizing local, easily accessible herbs and sustainable practices. Community herbalists do not diagnose or treat medical conditions but instead act as teachers and guides, sharing knowledge through workshops, community gardens, herbal clinics, and informal advice.

They often work within a holistic, anti-capitalist, and anti-oppression framework, valuing interconnectedness between people,

plants, and the environment. Their work may include herb growing, foraging, remedy making, and educational outreach, and they may serve underserved populations or build resilient health practices within neighborhoods.

While some community herbalists have formal training, many learn through self-study, apprenticeships, or experiential learning. Importantly, there is no standardized licensing of herbalists in the United States, so the path to becoming a community herbalist is diverse and personal.

Some herbalists may be members of organizations like the American Herbalists Guild (<https://www.americanherbalistsguild.com/>), the Herb Society of America (<https://www.herbsociety.org/>), or the American Association of Drugless Practitioners (<https://aadp.net/>). Others may simply be recognized by the communities that they serve, without any organizational memberships or certifications.

Groups like the Herbalista Free School (<https://herbalista.org/>) the Herbal Medics Academy (<https://herbalmedics.academy/>), the Herbal Academy (<https://theherbalacademy.com/>), the Chestnut School of Herbal Medicine (<https://chestnutherbs.com/>) the Science & Art of Herbalism (<https://scienceandartofherbalism.com/>), and the Berkeley Herbal Center (<https://www.berkeleyherbalcenter.org/>) all offer training and guidance to community herbalists.

Folk Medicine

Folk medicine is the mixture of traditional healing practices and beliefs that involve herbal medicine, spirituality and manual therapies or exercises in order to diagnose, treat or prevent an ailment or illness.

The World Health Organization states that it is mostly practiced by indigenous or native populations and as much as 80% of the population in certain countries within Asia and Africa rely on it for primary care. Folk Medicine may also be referred to as alternative medicine, holistic medicine and Eastern Medicine (named after its historic practice in countries of Asia, particularly China).

Whether you include folk medicine in your practice or not, it is still useful to have some knowledge of these practices since a large part of the world's population relies on folk medicine.

Examples of courses in folk medicine include:

- Curanderismo: Traditional Healing Using Plants - University of New Mexico on Coursera
- Everyday Chinese Medicine - The Chinese University of Hong Kong on Coursera
- The Gaia School of Healing (<https://www.gaiaschoolofhealing.com/>) is an educational organization based in Putney, Vermont, founded in 2001. It offers structured courses, workshops, retreats, and apprenticeships focused on herbalism, sacred plant medicine, and ancestral healing practices. The school is recognized for its immersive, experiential learning approach that blends scientific knowledge with spiritual and ecological awareness.

The above are given only by way of example, and may or may not be right for your study of folk medicine. As with any study of healthcare and medicine, you should do your own research to determine what will best meet your needs.

Complementary and Alternative Healthcare

Complementary and alternative healthcare and medical practices (CAM) is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine. The list of practices that are considered as CAM changes continually as CAM practices and therapies that are proven safe and effective become accepted as the “mainstream” healthcare practices.

Traditional Chinese Medicine (TCM) and Ayurveda are widely practiced alternative medicinal systems, but their safety and effectiveness vary significantly.

Ayurveda, the traditional Indian medicine (TIM) and traditional Chinese medicine (TCM) remain the most ancient yet still living traditions in complementary and alternative healthcare. There has been increased global interest in traditional medicine, with efforts to monitor and regulate herbal drugs and traditional medicine underway in many countries. China has been successful in promoting its therapies with more research and science-based approach, while Ayurveda still needs more extensive scientific research and a stronger evidence base.

TCM: There is more scientific research and clinical evidence supporting TCM compared to Ayurveda. Practices like acupuncture have shown proven efficacy for chronic pain, migraines, and nausea. Herbal formulations used in TCM are increasingly studied, with some demonstrating benefits in managing conditions like menopausal symptoms and inflammation.

Ayurveda: While Ayurvedic practices such as yoga, meditation, and dietary changes are associated with positive health outcomes, the evidence for its herbal and mineral-based treatments is mixed and often weak. Some studies suggest potential benefits, but many lack rigorous clinical validation.

In the West, naturopathic medicine and homeopathic medicine each arose in the late 19th century as reactions to the largely ineffectual and toxic conventional approaches of the day: purging, bleeding, and treatments with heavy metals such as mercury and arsenicals.

Today, **Naturopathy** is a well-established alternative medical system that emphasizes the body's innate ability to heal itself through natural means. It focuses on non-invasive treatments, such as dietary changes, herbal medicine, and lifestyle modifications, and is recognized as a licensed system in several countries, including the United States and Canada.

Homeopathy: There is no reliable scientific evidence that homeopathy is effective beyond a placebo effect. Major reviews by authoritative bodies—including the Australian National Health and Medical Research Council (NHMRC), the European Academies' Science Advisory Council (EASAC), and the Cochrane Collaboration—have concluded that homeopathy does not work for any health condition. The principles behind homeopathy—such as "like cures like" and the idea that extreme dilution increases potency—contradict established laws of physics, chemistry, and biology.

Free and Low-Cost Courses and Educational Platforms

We've talked about the Chinese barefoot doctors (now village doctors), street medics, guerrilla medicine, and community herbalists and folk medicine; but where can you gain further healthcare knowledge if you don't have \$50,000 - \$100,000 per year to attend medical school? Fortunately, there are several organizations that offer free healthcare, public health, and preventive medicine courses to the general public. Just sign-up and register with each (or any) of these organizations to begin your studies and enhance your medical knowledge.

Advanced Disaster Medical Response (ADMR) Course

(<https://www.facs.org/quality-programs/trauma/education/advanced-disaster-medical-response/>) is an innovative, online course designed for all multidisciplinary disaster responders, whether domestic or international, and regardless of the cause of the disaster. The course was developed in cooperation with the Massachusetts General Hospital, Department of Surgery, International Trauma and Disaster Institute (ITDI). Twenty-eight subject medical experts with extensive experience in disaster response contributed to the content of the course. The modules focus on the Principles of Disaster Medical Response and include:

- Mass Casualty Incident Management
- Incident Command System
- Disaster Medical Triage
- Evacuation
- Blast Injuries
- Crush Injuries
- Psychological Response to Disaster

American Board of Pathology (ABPath) (<https://abpath.org/>) an online Histology Primer, a review of the highlights of histology basics.

Basic Life Support (BLS) Training Course - Mayo Clinic

(<https://mccmscontent.mayo.edu/LSC/BLS/English/index.html>) In this course, you'll gain essential knowledge and practical skills that could make the difference between life and death in emergency situations. Basic Life Support (BLS) is a critical set of techniques used to maintain breathing and circulation in individuals experiencing life-threatening emergencies such as cardiac or respiratory arrest.

CDC OneLab REACH (<https://reach.cdc.gov/training/card>) OneLab REACH (Rapid Education and Capacity-building Hub) is a customized learning management system designed specifically for laboratory professionals and the testing community. OneLab REACH offers free eLearning and virtual reality courses, printable and video job aids, and continuing education.

Centers for Disease Control and Prevention (CDC TRAIN)

(<https://www.train.org/cdctrain/welcome>) is a gateway into the TRAIN Learning Network, the most comprehensive catalog of public health trainings shared by public health organizations across the USA.

Center for Domestic Preparedness

(https://cdp.dhs.gov/online_course) The Center for Domestic Preparedness (CDP) offers a variety of online training courses, partners with the **Office for Bombing Prevention** (<https://cdp.dhs.gov/obp>) who also offers online training opportunities.

CDC Yellow Book (<https://www.cdc.gov/yellow-book/site.html>) has been a trusted resource among healthcare professionals for over half a century. It compiles the U.S. government's current travel health

guidance, providing healthcare professionals and international travelers with expert guidance for safe and healthy international travel. Along with disease-specific prevention and treatment recommendations, this comprehensive reference text equips readers with the background and context needed to understand and address public health threats associated with all types of international travel.

Cholera Outbreak Response - Field Manual

(<https://www.choleraoutbreak.org/>) The response to a cholera outbreak must focus on limiting mortality and reducing spread of the disease. It should be comprehensive and multisectoral including: epidemiology, case management, water, sanitation and hygiene (WaSH), logistics, community engagement and risk communication. All efforts must be well coordinated to ensure a rapid and effective response across sectors. This document provides a framework to detect and monitor cholera outbreaks and to organize the response. It includes a short section linking outbreak response to both preparedness and long-term prevention activities.

Columbia University Austere Medicine Simulations (<https://austere-medicine.cml.columbia.edu/>) The Austere Medicine initiative is a positive environment for a community of final-year medical students to learn about medical care in resource-limited settings, including wilderness and disaster environments.

Crimethinc Demonstrator's Guides

(<https://crimethinc.com/categories/a-demonstrators-guide>) In a world optimized for administration, everything that cannot be classified or displayed on a screen is crimethink. It is the spirit of rebellion without which freedom is literally unthinkable.

Crisis Intervention Worker Certificate (<https://myomhsas.org/crisis-intervention-worker-certification/>) The Pennsylvania Department of Human Services (PA-DHS), Office of Mental Health and Substance Abuse Services (OMHSAS) created learning modules for anyone interested in working within the Crisis System.

Deployed Medicine (<https://www.deployedmedicine.com/>) is a platform used by the United States Defense Health Agency to trial new innovative learning models aimed at improving readiness and performance of deployed military medical personnel. The intent is to deliver personalized, dynamic learning using the most current and accessible technology, enabling a self-directed and continuous study of medical best practices and lessons learned.

Disaster Ready (<https://www.disasterready.org/>) offers over 1,500 free online courses, videos, and guides for humanitarian aid and development professionals, including a series of Free Certificates and Certifications - such as Project Management Essentials Certificate, Personal Safety and Security Certificate, Leadership Essentials Certificate, Security Risk Management Certificate Programs.

Global Anesthesia & Critical Care Learning Resource Center (<https://www.stanesglobal.com/courses>) Born out of necessity to support ongoing academic partnerships focused on medical education and training for Anesthesiology and Critical Care Medicine, the Global Anesthesia and Critical Care Learning Resource Center ("the LRC") began in May of 2020 in response to travel restrictions limiting in-person exchange programs. The LRC was created by faculty within the Division of Global Health Equity within the Department of Anesthesiology, Perioperative and Pain medicine at Stanford University.

Global First Aid Reference Centre (an IFRC reference center)

(<https://www.globalfirstaidcentre.org/>) believes that in order to make communities safer and resilient, first aid needs to be recognized as an integral part of a wider developmental approach. The platform offers a range of learning materials, tools and guidance to support your National Society and their first aid training programs.

Global Health Learning Center (GHLC)

(<https://globalhealthlearning.org/>) has provided state-of-the-art global health information online, worldwide. Access is easy and free. The primary audience for the Global Health Learning Center is health sector staff, but any individual with the desire or need to learn is welcome to take any courses.

Healthcare of Homeless Persons

(https://bhchp.org/BHCHPManual/pages/intro_to_manual.html) A Manual of Communicable Diseases and Common Problems in Shelters and on the Streets.

Humanitarian U (<https://humanitarianu.org/>) works with leading organizations and institutions around the globe to equip humanitarian aid workers with everything they need to support relief efforts in times of disaster and crisis.

Institute for International Medicine (INMED) (<https://www.inmed.us/>)

exists to equip healthcare professionals & students with the unique skills necessary to effectively serve the world's most forgotten people. INMED is a graduate school offering didactic instruction in the full range of global health topics via online, hybrid, and in-classroom courses, as well as through conferences. They also complement such instruction with supervised service-learning experiences at over 45 INMED Training Sites in 25 low-resource countries. INMED learners

can earn a Graduate Certificate, a Graduate Diploma or a Master's Degree in International Health.

Interburns (<https://interburns.org/>) is a charity focused on improving burn care in low-resource and conflict-affected regions across Asia, Africa, and the Middle East. It works to reduce death, disability, and disfigurement through training, education, research, and community-based programs that cover first aid and prevention. Interburns offers online courses in Essential and Advanced burn care.

International Federation of Red Cross and Red Crescent Societies (IFRC) (<https://www.ifrc.org/>), is a global humanitarian network helping millions during disasters and health emergencies. The IFRC offers a wealth of learning opportunities and resources to their National Societies, volunteers, partners and the general public.

Introduction to Humanitarian Healthcare Online Course

(<https://services.rcsed.ac.uk/events-courses/introduction-to-humanitarian-healthcare-online-course>) – Offered by the Royal College of Surgeons of Edinburgh (RCSEd) in partnership with UK-Med and the Faculty of Remote, Rural and Humanitarian Healthcare (FRRHH), this free self-paced course provides a comprehensive foundation in humanitarian healthcare.

Khan Academy Health & Medicine Course

(<https://www.khanacademy.org/science/health-and-medicine>) The medical world can be a confusing place. Patients, their families—and even students entering health fields might feel overwhelmed by the complex words and complicated explanations. This course attempts to make the fascinating human organism a bit easier to understand.

MedlinePlus (<https://medlineplus.gov/>) is an online health information resource for patients and their families and friends. It is a service of the National Library of Medicine (NLM), the world's largest medical library, which is part of the National Institutes of Health (NIH).

Military Clinical Readiness Curriculum (<https://www.facs.org/for-medical-professionals/education/programs/military-clinical-readiness-curriculum/>) The Military Clinical Readiness Curriculum is designed for a general surgeon deployed to a relatively far forward battlefield base who must be capable of providing initial trauma resuscitation and life- and limb-saving surgical procedures for those injured in combat. It is also relevant to all deployed surgeons no matter their location as well as all trauma/general surgeons caring for the injured no matter their location. The curriculum can be utilized to correct an identified knowledge deficit or for just-in-time learning. The curriculum is broken down into seven domains of knowledge, including:

- Airway and Breathing
- Critical Care and Prevention
- Expeditionary Unique
- Head and Spine Injury
- Torso Trauma
- Transfusion and Resuscitation
- Wounds, Amputations, and Fractures

National Center for Complementary and Integrative Health - Herbs at a Glance (<https://www.nccih.nih.gov/health/herbsataglance>) is a series of brief fact sheets that provides basic information about specific herbs or botanicals—common names, what the science says, potential side effects and cautions, and resources for more information.

National Health Care for the Homeless Council (<https://nhchc.org/>)

is the premier national organization working at the nexus of homelessness and health care, offering resources such as: [Adapting Your Practice: Treatment and Recommendations for Homeless Patients](https://nhchc.org/clinical-practice/adapted-clinical-guidelines/) (<https://nhchc.org/clinical-practice/adapted-clinical-guidelines/>) Standard clinical guidelines often fail to take into consideration the unique challenges presented by homelessness that may limit an individual's access to needed services or ability to adhere to a plan of care. To fill this gap, the HCH Clinicians' Network developed a series of adapted clinical guidelines, and a series of online courses (<https://nhchc.org/online-courses/>)

NextGenU (<https://nextgenu.org/>) is the world's first free, health science learning platform. They provide free, high-quality medical, nursing, and public health education to students, professionals, and institutions worldwide.

Northwest Center for Occupational Health and Safety (NWCOHS)

(<https://oshce.uw.edu/nwcohs-courses>) programs offered by the University of Washington Department of Environmental & Occupational Health Sciences (DEOHS) maintains and enhances current occupational health knowledge and skills in the region. Each course will include lessons learned, practical resources and ready-to use toolkits for assessing, evaluating, and preventing injuries and illnesses.

Northwest Center for Public Health Practice (NWCPHP)

(<https://www.nwcphp.org/>) is a public health training, research, and evaluation center focused on improving public health in the Northwest region. It is one of ten regional Public Health Training Centers in the national network, linking academic knowledge with real-world public

health practice. NWCPHP offers no-cost training resources, particularly for professionals in rural communities.

Nurses International (<https://nursesinternational.org/>) puts learning materials into the hands of nurse educators and students so that nurses in developing countries can obtain the education they need to bring advanced care to their communities. The Nurses International Open Access Curriculum is available without cost to students.

Open Manual of Surgery in Resource-Limited Settings

(<https://www.vumc.org/global-surgical-atlas/>) is a series of articles based on the real-world experiences of physicians living and working in resource-limited settings like Sub-Saharan Africa, where they face difficult situations every day, having to make decisions and perform surgery without advanced tools, sometimes well outside their comfort zone.

OpenWHO (<https://openwho.org/>) is the World Health Organization's learning resource hub for health emergencies. No registration, no certificates — just vital knowledge to save lives.

Parasites Without Borders (<https://parasiteswithoutborders.com/>) A comprehensive, advanced and free educational resource on all aspects of parasitic diseases and their impact on humanity around the globe.

Pan American Health Organization (PAHO) Virtual Campus for Public Health (<https://campus.paho.org/en>) aims at developing the competencies of health workers. They offer certified courses and webinars, along with materials and resources tailored to the continuing education programs of health professionals in every country. All VCPH products are 100% free and open to participants.

PubMed Central (<https://pmc.ncbi.nlm.nih.gov/>) is the free, open access branch of PubMed. It includes full-text versions for all indexed papers.

Regional Public Health Training Centers collectively represent the nation's most comprehensive resource for public health workforce development. They help sustain a skilled public health workforce by providing access to world-class professional development, experiential learning, and consulting and technical assistance.

- Region 1: New England PHTC (<https://sites.bu.edu/nephtc/>)
- Region 2: Region 2 PHTC (<https://region2phtc.org/>)
- Region 3: Mid-Atlantic Regional Public Health Training Center (<https://lms.marphtc.pitt.edu/>)
- Region 4: Region IV PHTC (<https://r4phtc.org/>)
- Region 5: Region V PHTC (<https://www.rvphtc.org/>)
- Region 6: South Central PHTC (<https://r6scphtc.tulane.edu/>)
- Region 7: Midwestern PHTC (<https://mphtc.org/>)
- Region 8: Rocky Mountain PHTC (<https://www.rmphtc.org/>)
- Region 9: Western Region PHTC (<https://wrphtc.arizona.edu/>)
- Region 10: Northwest PHTC (<https://www.nwcphtc.org/>)

Rescue Expedition & Disaster Medicine (RED-MED)

(<https://redmed.education/red-med-online>) RED MED online is a comprehensive, self-paced course, including the clinical and non-clinical competencies and considerations for remote area medical roles. The course provides material for healthcare professionals, leaders and support staff working in or aspiring to join, rescue, expedition, disaster response, humanitarian, wilderness, industrial and security teams. The content covers elements of hostile environment awareness training (HEAT), wilderness and environmental topics,

survival, expedition planning, logistics, telemedicine, point of care ultrasound (POCUS), landmines, risk management, medical emergency response planning, active shooter and much more.

San Diego State University (SDSU) Institute for Public Health

(<https://iph.sdsu.edu/courses/online.php>) offers online courses to help healthcare professionals to better recognize and respond to chemical, biological, radiological, nuclear and explosive events and to other large-scale public health emergencies.

SURGhub (<https://www.surghub.org/>) the United Nations Global Surgery Learning Hub, is an online platform designed to enhance surgical training and education. It offers free, high-quality surgical training from leading institutions, making it accessible anytime and anywhere.

University of the People (UoPeople) (<https://www.uopeople.edu/>) is the first non-profit, tuition-free, American, accredited, online university dedicated to opening access to higher education globally. UoPeople offers both an associate's and bachelor's degree in health science.

University of Utah Associate in Wilderness Medicine

(<https://www.awls.online/associate-in-wilderness-medicine>) is a self-paced online certification program that does not have a fixed number of hours. It consists of completing four online courses -- One of the following courses: AWLS - Advanced Wilderness Life Support or WFR - Wilderness First Responder or BWLS - Basic Wilderness Life Support - AND all three of these additional courses: Backpacking Medicine, SAR - Search and Rescue, Wilderness Travel and Tropical Medicine. The program does not specify a total hour count, but it is designed for individuals who have already completed a Wilderness First Aid Certificate, Wilderness First Responder, or Wilderness EMT course.

University of Washington IDEA - Infectious Diseases Education & Assessment (<https://idea.medicine.uw.edu/>) content, resources, and services are free and accessible 24/7 to help health care professionals and trainees learn how to diagnose, treat, and prevent infectious diseases.

University of Washington Online Learning Modules

(<https://wish.washington.edu/online-learning-modules>) UW has developed a Basic Technical Skills Curriculum designed for interns in surgical and procedural specialties. It covers instrument handling, sutures and knot tying, wound closure, and hemostasis techniques. This curriculum has been well validated and has now been adopted nationally and internationally. Completion of this self-guided curriculum has been shown in several research studies to significantly accelerate technical skill acquisition.

WHO Academy (<https://www.who.int/about/who-academy/>) is the World Health Organization's lifelong learning center, bringing the very latest innovations in adult learning to global health.

Whole Blood Field Transfusion Course (<https://thor.podia.com/thor-whole-blood-transfusion-course>) presents a current evidence-based field transfusion course.

Wilderness Medical Society Clinical Practice Guidelines

(<https://wms.org/magazine/magazine/Core-Columns/WMS%20CPG%20Summaries.aspx>) are written in a scientific style and formatted for peer-reviewed medical journals.

Massive Open Online Courses (MOOC)

In addition to the groups and organizations listed above, **Coursera** (<https://www.coursera.org/>) is a global online learning platform that offers access to a wide range of online courses, professional certificates, and accredited degrees from leading universities and companies. A similar platform is **edX** (<https://www.edx.org/>) a nonprofit online learning platform founded in 2012 by Harvard University and the Massachusetts Institute of Technology (MIT). **edX** offers a wide range of MOOCs. **MIT Open Course Ware** (MIT OCW) (<https://ocw.mit.edu/>) is an initiative of the Massachusetts Institute of Technology (MIT) to publish all of the educational materials from its undergraduate- and graduate-level courses online, freely and openly available to anyone, anywhere. **Future Learn** (<https://www.futurelearn.com/>) located in London offers a large number of courses from UK colleges and universities. Search these MOOC platforms for course in health and medicine. Most courses free to audit, there may be a fee to obtain course certificates.

Universal Class (<https://www.universalclass.com/>) – enroll through your public library to gain free access to courses – **Udemy** (<https://www.udemy.com/>), **Alison** (<https://alison.com/>), **Medtigo** (<https://courses.medtigo.com/>) and **Centre of Excellence** (<https://www.centreofexcellence.com/>) in the UK, all offer short, non-college-level, courses related to health and medicine and alternative healthcare topics. Free or significantly discounted access to courses from these platforms is often available. Check for discount codes and special offers. **Saylor Academy** (<https://www.saylor.org/>) is a nonprofit initiative working since 2008 to offer free and open online courses to all who want to learn. They offer 150+ full-length courses at the college and professional levels, each built by subject matter experts.

A Sample Curriculum for the Apocalypse Doctor

There are literally thousands of free and low-cost courses available to you. But where do you start?

If you are going to provide healthcare support to your community it is important that you have a strong understanding of human anatomy, biology, physiology, and therapeutics. Begin your training by taking as many courses in these areas as you can. Add courses on medical terminology, calculations (basic math), and chemistry.

Before you begin working with any patient it is essential that you understand basic infection prevention, hygiene, and how to employ standard precautions. Every student in a healthcare field is required to take courses in this area, and you should too.

Next add first aid and emergency care classes. At a minimum your first aid and emergency care training should include:

- CPR / AED and Basic Life Support
- Standard First Aid
- First Aid for Babies and Children
- Temperature Related Stress and Illnesses
- First Aid for Burns
- Emergency Trauma Response / TECC / Stop the Bleed
- Combat Lifesaver Course
- Wilderness First Aid / Wilderness First Responder
- Seizure Recognition and First Aid Certification
- Stroke Recognition
- Naloxone Overdose Training
- Psychological First Aid

First Aid Resuscitation – Choking, CPR, and AED 103-03

(Disaster Ready) (<https://ready.csod.com/ui/lms-learning-details/app/course/4e637288-0410-4c94-a717-b1ac7a3c819e>)

Basic Life Support (BLS) Training Course (Mayo Clinic)

(<https://mccmscontent.mayo.edu/LSC/BLS/English/index.html#/>)

TECC Familiarization (FEMA)

(https://emilms.fema.gov/training/microlearning/tecc_familiarization/)

Stop the Bleed (Local / STB) (<https://www.stopthebleed.org/get-trained/online-course/>)

First Aid 103-01 (Disaster Ready) (<https://ready.csod.com/ui/lms-learning-details/app/course/5a948467-abc0-4be0-bacd-086b04ca7ee2>)

Emergency Trauma Response (Mountain Man Medical)

(<https://www.mountainmanmedical.com/trauma-medicine-training/>)

SAR Subject First Encounter (Base Medical) (<https://base-medical.thinkific.com/courses/subject-first-encounter>)

Basic Emergency Care (BEC) (World Health Organization)

(<https://whoacademy.org/>)

Essential Emergency & Critical Care (UN Surgery Hub)

(<https://www.surghub.org/course/essential-emergency-and-critical-care>)

Temperature Related Stress and Illnesses 103-04 (Disaster Ready)

(<https://ready.csod.com/ui/lms-learning-details/app/course/5d5707d2-9547-4e44-b9b8-1a825feaa49d>)

Heat-Related Illness - Risk Factors, Types & Prevention (CDC)

(<https://www.train.org/cdctrain/course/1095636/>)

Standard First Aid for Adults (IFRC)

(<https://ifrc.csod.com/client/ifrc/default.aspx>)

First Aid for Babies and Children (IFRC)

(<https://ifrc.csod.com/client/ifrc/default.aspx>)

Seizure Recognition and First Aid Certification (Epilepsy Foundation) (<https://learn.epilepsy.com/>)

Keep the Brain Alive in 45 (Stroke Recognition) (VAH)

(<https://www.train.org/cdctrain/course/1113768/>)

Naloxone Overdose Training (BCCDC)

(<https://www.naloxonetraining.com/>)

Bloodborne Pathogens 103-02 (Disaster Ready)

(<https://ready.csod.com/ui/lms-learning-details/app/course/f1e4f978-1062-49c6-aa4a-8039f3ae995b>)

Psychological First Aid for All: An Introduction (IFRC)

(<https://ifrc.csod.com/client/ifrc/default.aspx>)

First Aid Stress & Trauma – FAST (Disaster Ready)

(<https://ready.csod.com/ui/lms-learning-details/app/course/a7e9737e-34c6-4bac-a839-9d7b29546ca7>)

Physicians for Human Rights (<https://phr.org/>) offers 'Fact Sheets on Commonly Used Crowd-Control Weapons', pointing out that "crowd-control weapons can cause serious injury, disability, and even death. These fact sheets describe the health impact of acoustic weapons, directed energy devices, rubber bullets (and other kinetic impact projectiles), stun grenades (and other disorientation devices), tear gas (and other chemical irritants), and water cannons."

The University of Colorado offers an **Emergency Medical Technician (EMT) Specialization** and a **Wilderness First Aid Specialization** online via Coursera. The **Combat Life Saver Course** material is available at (<https://tccc.org.ua/en/collection/tccc-clc>)

Get as much hands-on practice with first aid techniques as you can. Reading or watching a video about how to splint a broken arm is good, having practiced splinting with a training partner is better.

Community health and sanitation training adds to your capabilities. Know how to treat water to provide safe drinking water to a community. Practice building filters, using SODIS, the proper use of chemicals such as bleach and iodine, and safe water collection methods. Be able to identify infestations of bed bugs, lice, scabies, and rodents (mice and rats) and know how to respond to these infestations. Study field hygiene and sanitation. Military manuals on this topic go into depth on keeping troops healthy in the field, and these same techniques apply to keeping a community healthy in a remote camp or village.

The University of Utah offers a free online **Neighborhood Emergency Response Planning (NERP)** course (<https://cert.hazready.com/CourseCatalog?friendlyId=DP000029>), and an online **Community Emergency Response Team (CERT)** course (<https://cert.hazready.com/CourseCatalog>). While NERP and CERT are not ‘medical’ courses, they will certainly enhance your knowledge for working in a disaster response and recovery environment.

The United States Army Medical Department Center and School published a series of correspondence courses to help train its students and healthcare providers. These correspondence courses can be found online, and while you must be military to officially enroll, the courses

themselves are available to the general public for self-study and reference. Examples of these courses include:

- Basic Patient Care Procedures (10 hours)
- Nursing Fundamentals I (12 hours)
- Nursing Fundamentals II (12 hours)
- Obstetric and Newborn Care I (13 hours)
- Obstetric and Newborn Care II (15 hours)

Although over time you should probably complete the majority of the Army medical correspondence courses.

The **Nurses Tool Kit** (20 hours) course from the University of Michigan on Coursera will add to your nursing skills. The **Nurse Aide** (30 hours) and **Nursing Fundamentals** (90 hours) courses from NextGenU are also recommended.

The US Navy (Navy Medicine) offers an online **Sick Call Screeners Course** that can help you learn to interact with patients. Like the Army correspondence courses, official enrollment is limited to military personnel, but the course material is available to the general public.

Go to the **Hesperian Health Guides** website (<https://hesperian.org/>) and get a copy of the book Where There Is No Doctor. This is an essential reference for any healthcare provider working in a remote and austere environment. Study this book along with the other resources and references provided by Hesperian. Along this line we also recommend Village Medical Manual 7th Edition: A Guide to Health Care in Developing Countries - by Mary Vanderkooi (Combined Volumes 1 and 2) and Combat Casualty Care from (<https://medcoe.army.mil/borden-tb-combat-casualty-care>)

Nemours Kids Health 50+ Guides to Illness & Injuries

(<https://kidshealth.org/en/parents/first-aid-guides.html>) Be prepared with Nemours Kids Health guides to injuries and illnesses. They'll help you know if something just needs home care or if it's an emergency that means a visit to the ER.

The CDC Just in Time Learning Series

(<https://www.train.org/cdctrain/search?query=JIT%20Learning&type=c> course) consists of a number of short courses including:

- An Introduction to Airway Management in a Disaster Setting
- Essentials in Wound Management in a Disaster Setting
- Initial Management of the Trauma Patient
- Management of Burns in a Disaster Setting

The following **ICS Courses**, available from FEMA (<https://training.fema.gov/is/crslist.aspx>) are often required / recommended for those working with an emergency management / response organization:

- ICS 100 Introduction to Incident Command System
- ICS 200 Basic Incident Command System for Initial Response
- ICS 700 Introduction to the National Incident Management System
- ICS 800 National Response Framework, An Introduction

Food Production, Nutrition, and Healthy Living

EatFresh.org Mini Course (<https://eatfresh.org/eatfreshorg-mini-course/>) is a free, mobile-friendly nutrition course with 15 topics on healthy living, using easy, inexpensive recipes. Available in English and Spanish, it is funded by USDA SNAP.

Organics for Orphans (<https://thriveforgood.org/courses/>) The Thrive Institute is the first online organic gardening and nutrition course created to decrease hunger and malnutrition in emerging countries.

Create Better Health (SNAP-Ed) Online Course

(<https://extensioncourses.usu.edu/product/create-better-health/>) is a free 8-lesson course that will help you learn how to eat well and be active on a budget! The course was developed by the Utah State University Extension Create Better Health (SNAP-Ed) program based on the USDA Dietary Guidelines for Americans, MyPlate, and the Physical Activity Guidelines for Americans. The lessons include a nutrition topic, food resource management skills, physical activity discussions, and quick, healthy recipes.

SDG Academy Global Public Health course

(<https://sdgacademy.org/course/global-public-health/>) is a massive open online course all about the institutions, infrastructure and interplay of actors that constitute health not only in local communities, but also on a global scale. In this course, you'll discover how health is influenced by environment, food systems, energy security, transport, trade and human migration.

Nutrition Science: Lifestyle Medicine

(<https://on.abdn.ac.uk/courses/lifestyle-medicine/>) Study lifestyle medicine online for free with expert practitioners and researchers from

the University of Aberdeen. Investigate the role of diet, exercise, mental health and environment in improving health outcomes.

Harvard Medical School offers an online course **6-Week Plan for Healthy Eating** This online course is an engaging, empowering and exciting way to learn. The course is designed as a 6-week plan; however, you can watch and learn at your own pace. There are interactive exercises, fun quizzes and downloadable worksheets and recipes all designed to help you make healthier food choices.
(<https://www.harvardhealthonlinelearning.com/courses/6-week-plan-for-healthy-eating-2>)

The National Heart, Lung, and Blood Institute

(<https://www.nhlbi.nih.gov/education>) offers tutorials for the public on heart and vascular, cholesterol, high blood pressure, overweight and physical activity, and sleep disorders.

Native Roots Greener Futures - Walking the Kálhaculture Way

(<https://cwis.org/study-with-us/our-courses/>) - This 3.5-hour course explores indigenous knowledge systems, the benefits of wild plants for health and medicine, and the negative effects of climate change on wild plants and Indigenous Peoples who rely on them. It also provides specific steps about how to become an activist scholar and a community change maker, in order to apply and share the principles of Indigenous ways of knowing with the purpose of protecting and nourishing the environment.

Psychological First Aid & Suicide Prevention

Psychological First Aid

(<https://www.samhsa.gov/resource/dbhis/psychological-first-aid>) - Offered by Johns Hopkins University through Coursera, this 7-hour course introduces students to the RAPID model of Psychological First Aid (Reflective Listening, Assessment of Needs, Prioritization, Intervention, and Disposition). While students must pay to receive a certificate of course completion, they can take the course free of charge without receiving a certificate (though site registration is required).

Psychological First Aid (PFA) Online Training is for individuals new to disaster response who want to learn the core goals of PFA, as well as for experienced practitioners who want a review of PFA.

(https://www.ptsd.va.gov/professional/continuing_ed/psych_firstaid_training.asp) This is a 6-hour interactive course in which the user takes the role of a provider in a post-disaster scene. It features activities, video demonstrations, and mentor tips from the nation's trauma experts and survivors. After an introduction and overview, the course explains the Core Actions of PFA and includes a module on provider self-care.

Principles of Psychological First Aid

(<https://www.disasterready.org/principles-of-psychological-first-aid>) Recommended for first responders and service providers who may interact with people affected by a crisis, this 2-hour online course covers supportive listening, normal stress responses, positive coping mechanisms and the importance of linking people to support.

Skills for Psychological Recovery (SPR)

(https://www.ptsd.va.gov/professional/continuing_ed/skills_psychological_recovery.asp) After disasters or adverse events, many people who

are experiencing stress reactions may not self-identify a need for mental health support or self-refer for care. SPR is a flexible, evidence-based model that helps providers teach core skills—problem-solving, behavioral activation, management of stress reactions, helpful thinking, and rebuilding healthy social connections—to help reduce distress and improve functioning. This 4.5-hour interactive online course trains lay professionals and providers responding to disasters, as well as those working to bolster resilience-building skills for Veterans. In addition to reviewing the core skills of SPR and their application in different settings, expert advice, scripts, video examples, and case studies are included. Additional information and tips are included for working with children after disasters.

Suicide Prevention: Responding with Care

(<https://www.acorncourses.org/courses/suicide-prevention>) This 3-hour on-demand, online course builds knowledge and skills that traditional health workers need to screen for suicide risk, ask about suicide directly, refer to services, and follow up with clients.

Zero Suicide (<https://zerosuicidetraining.edc.org/>) Counseling on Access to Lethal Means - Learn how to counsel people at risk for suicide—and their families—on reducing access to lethal means in this award-winning course. Preventing Suicide in Emergency Departments - Learn how to conduct screening, assessment, and brief interventions with patients at risk for suicide in the emergency department.

SAMHSA Disaster Technical Assistance Center (DTAC) Trainings

(<https://www.samhsa.gov/technical-assistance/dtac/training>) DTAC free online trainings are designed to help participants improve their awareness and understanding of the behavioral health effects of disasters and disaster and emergency response.

In Residence / Hands-On Training

For those who are able to attend a course in residence we recommend the **SOLO Schools International Geo Medic course** (<https://soloschoolsinternational.com/geo-medic/>) their most advanced and updated course, designed for those needing advanced medical training for extraordinary work, remote missions, natural disaster relief or any environment where you must provide definitive patient care.

SOARescue Extended Austere Provider (EAP)

(<https://www.soarescue.com/eap>) This 5-day immersive educational experience will prepare students to provide care for prolonged periods of time when the next level of care is days away. This course allows students to be exposed to equipment, procedures, and mindsets that may not currently flow through to traditional pre-hospital care providers.

Remote Medical Training's (<https://remotemedicaltraining.com/>) **Remote Emergency Medical Technician and Remote Medicine for Advanced Providers** courses are also recommended for individuals holding or seeking licensure in remote and emergency medicine.

Crisis Medicine (<https://www.crisis-medicine.com/>) In-person and online classes taught by Mike Shertz, MD, former Army Special Forces medic and practicing Emergency Medicine & EMS physician. Crisis Medicine courses show you actual wound profiles, case studies, medical literature, and step-by-step skills to engage you during training and lock the lessons in.

College of Remote and Offshore Medicine (CoROM)

(<https://corom.edu.mt/>) Located in Malta, CoROM is a non-profit, public benefit foundation and Higher Education Institution providing academic

courses & degree programs for medical professionals working in remote & austere Environments around the globe.

Rescue Expedition & Disaster Medicine (RED-MED)

(<https://redmed.education/red-med-online>) RED-MED online is a comprehensive, self-paced course, including the clinical and non-clinical competencies and considerations for remote area medical roles. The course provides material for healthcare professionals, leaders and support staff working in or aspiring to join, rescue, expedition, disaster response, humanitarian, wilderness, industrial and security teams. The content covers elements of hostile environment awareness training (HEAT), wilderness and environmental topics, survival, expedition planning, logistics, telemedicine, point of care ultrasound (POCUS), landmines, risk management, medical emergency response planning, active shooter and much more. RED-MED offers in residence training for those who have completed their online course.

Austere and Emergency Medicine International

(<https://aemed.net/education/austere-medicine/>) offers several courses, including their Austere Medic (AM) program, which is recommended.

Mountaineers WFA / MOFA / WFR

(<https://www.mountaineers.org/activities/course-overviews/first-aid>) Wilderness First Aid (WFA) is designed to provide elementary skills in remote care based on recommendations from the Wilderness Medical Society and evidence-based research. Similar to the Wilderness First Aid Course, MOFA covers the elementary skills to be used in remote care. Additionally, MOFA includes teaching accredited CPR techniques and uses the Seven Steps and Medic First Aid prevention and

assessment practices. Wilderness First Responder (WFR) certification is an upgrade from AFA/WFA or MOFA. The Wilderness First Responder (WFR) certification is considered the minimum standard for outdoor professionals working as guides, trip leaders, and outdoor educators; the course is also recommended for individual adventurers venturing beyond the realm of quick and easy 911 access.

Aerie Backcountry Medicine's Semester in Wilderness

Medicine is a premier immersive program designed for college-aged, gap year, and early-career individuals seeking hands-on training in wilderness medicine and outdoor leadership. The program offers three distinct semesters—Spring (Costa Rica & Montana), Summer (Montana), and Fall (Montana & Indian Himalaya)—each lasting 8–12 weeks and combining academic rigor with real-world field experience.

Community colleges may offer courses to enhance your medical skills. These courses include certified nursing assistant programs, nursing / registered nurse (RN) programs, and emergency medical technician (EMT) courses, and paramedic programs. If you can afford the tuition (community college tuition is typically less than at a four-year college or university) and gain acceptance into one of these programs they are strongly recommended. However, admission to specific upper division nursing and paramedic programs is competitive and you may not be able to enroll directly into these courses without being enrolled in a full-time nursing or paramedic program.

Build your personal medical education curriculum from the resources you now have access to, and build a list of other training programs and opportunities as you find them. There are five core areas that build your foundation as an apocalypse doctor.

- Health Sciences (Anatomy, Physiology, Biology, etc.)
- Trauma & Emergency Care (EMR)
- Nursing and Patient Care
- Pharmacy (Drugs, Herbs, Medications)
- Community Health (Water, Sanitation, Hygiene & Prevention)

Complete at least 1000 hours of class time across these core areas. This gives you a foundation built on 1000 hours of study – around one year of focused part-time study (20 hours per week) – but remember that this is only a foundation – a base on which to build. Take your time as you study and make a good effort to learn the material presented in each area and course of study. You are not just logging hours, but rather you are learning medical skills that you will use to help yourself and others in need.

Look for opportunities to get hands-on practice, contact with real patients. Volunteer at a free clinic, work with street medics supporting underserved communities. Share your knowledge with others and be open to learning from other healthcare providers in your community.

How much study and clinical time is required to be proficient? While your study, training, and self-improvement should really never end, we can look to organizations like the American Herbalists Guild for some idea what is considered a proficient practitioner.

An American Herbalists Guild (AHG) Registered Herbalist is required to have approximately 800 hours of herbal education, along

with 400 hours of clinical experience. The AHG Suggested Education Guidelines broke that 800 hours down as follows

- Basic Human Sciences (150 hours)
- Nutrition and Medical Terminology (80 hours)
- Materia Medica (260 hours)
- History, Philosophy and Therapeutic Paradigms and Applications (Including Energetics) of Various Systems of Herbal Medicine (120 hours)
- Pharmacy, Pharmacognosy, and Dispensing (80 hours)
- Botany and Plant Science (60 hours)
- Current Evidence Based Botanical Research (20 hours)
- Practice Management and Ethics (30 hours)

While this is just one example, it is a useful representation of the effort needed to develop recognized proficiency as an herbalist, a representation that carries over into other areas of apocalypse medicine.

To add university-like structure to your studies we recommend NextGenU (<https://nextgenu.org/>). These are free full-length didactic university level courses that give you the same type of knowledge you might gain by paying thousands of dollars and sitting in a lecture hall. Add to this specialty courses like 'Surgical Foundations' provided for free on UN SURGhub (<https://www.surghub.org/course/surgical-foundations>) by the College of Surgeons of East, Central and Southern Africa (COSECSA), a course that has been specifically designed to train surgical trainees, and you begin to approximate some of the classwork of medical school.

Unauthorized Practice of Medicine

The unauthorized practice of medicine refers to the act of diagnosing, treating, prescribing medication, or performing medical procedures for physical or mental conditions without a valid medical license in the state where the services are provided. Every state requires that anyone practicing medicine have a license issued by that state and jurisdiction to do so. Practicing medicine without a state license to do so is illegal and depending on the circumstances may be charged as either a misdemeanor or a felony crime.

Good results are not a defense: Even if the person that you treat recovers from their illness or benefits from your help, the act of practicing medicine without a license is still a crime.

Good Samaritan Laws

Good Samaritan Laws provide legal protection to individuals who voluntarily offer medical aid during emergencies, shielding them from civil liability when acting in good faith and without compensation. These laws encourage bystanders and trained professionals to assist without fear of lawsuits. The scope of protection applies to laypersons and medical professionals (e.g., doctors, nurses, EMTs) who render emergency care outside their usual practice settings. Actions must be reasonable and within the individual's level of training (e.g., a RN should not perform surgery). Protection does not extend to acts of gross negligence, willful misconduct, or intentional harm.

Scope of Practice

Scope of practice is based on the provider's level of training, available equipment and resources, overall scenario, and need.

Public Safety Personnel	EMT	Advanced EMT	Paramedic
<i>Authorized Skills</i> (CCR §100018) • Perform CPR & AED • Perform Patient evaluation • Treatment for shock • Provide airway support including: Head-tilt/chin lift; jaw thrust; Manage manual airway obstructions; recovery position. • Perform Spinal immobilization • Perform Splinting • Irrigate eye • Assist with oral glucose administration • Assist with physician-prescribed epinephrine auto-injector and naloxone • Assist in emergency childbirth • Control hemorrhaging by direct pressure, pressure bandages, tourniquets, wound packing, and hemostatic dressings • Apply Chest seals and dressings • Perform simple decontamination techniques <i>Optional Skills (LEMSA Approved)</i> • Administer Epinephrine Auto- injectors • Administer Oxygen • Administer Duodote kits for self/peer • Administer Naloxone • Institute Oropharyngeal & Nasopharyngeal airways	<i>Basic Scope</i> (CCR §100063) • All Public Safety Skills • Perform Patient Assessment • Render basic life support, rescue and emergency medical care • Administer advanced first aid and OTC medications with LEMSAs approval • Transport ill and injured persons • Administer adjunctive breathing aids • Administer oxygen • Extricate patients • Conduct field Triage • Use mechanical restraints • Assist with administration of prescribed devices • Use of pulse oximetry • Administer continuous positive airway pressure <i>Optional Skills (LEMSA Approved)</i> • Institute Perilaryngeal airways • Administer Epinephrine Auto-injectors • Administer Duodote kits • Administer Naloxone	<i>Basic Scope</i> (CCR §100063) • All EMT skills • Use of Perilaryngeal airways • Use of Tracheo-bronchial suctioning • Institute intravenous (IV) catheters, saline locks, needles or other cannulae (IV lines) • Administer IV Glucose, Isotonic balanced salt solutions, and Naloxone • Establish pediatric intraosseous access • Obtain venous and/or capillary blood samples • Measure blood glucose • Administer 7 drugs in a route other than intravenous: ○ Nitroglycerine ○ Aspirin ○ Glucagon ○ Inhaled beta 2 agonists ○ Activated charcoal ○ Naloxone ○ Epinephrine <i>Optional Skills</i> Previously certified EMT- IIs have additional medications approved by the local EMS agency	<i>Basic Scope</i> (CCR §100146) • All Public Safety, EMT, & AEMT skills and medications • Use of Laryngoscope, remove foreign bodies with magills • Use of lower airway multi-lumen adjuncts, esophageal airway, perilaryngeal airways, stomal intubation, Endotracheal (ET) intubation (adults, oral) • Perform Valsalva's Maneuver • Perform Needle thoracostomy & cricothyroidotomy • Perform Naso/orogastric tube insertion/suction • Monitor thoracostomy tubes • Monitor/adjust potassium (≤ 40 mEq/L) IV lines • Utilization & monitoring of electrocardiographic devices • Defibrillation • Perform cardiac pacing • Perform synchronized cardioversion • Administer 25 medications • Bi-level positive airway pressure (BPAP) and positive end expiratory pressure (PEEP) • Institute intraosseous (IO) needles or catheters • Use of pre-hospital laboratory devices <i>Optional Skills</i> Local EMS Agencies may add additional skills and medications if approved by the EMS Authority

Six Tips to Help Identify Medical Quackery and Snake Oil

- **One product does it all.** Be suspicious of products that claim to cure a wide range of diseases. The agency continues to send warning letters and take enforcement action as appropriate against companies marketing fake cure-all products. These miracle cures don't exist - they're bogus – and the only thing these companies are selling is false hope.
- **Personal "success" testimonials.** Success stories, such as, "It cured my diabetes" or "It immediately stopped my COVID-19 infection," are easy to make up and are not a substitute for scientific evidence. Reviews found on popular online marketplaces and social media can be fake.
- **Quick fixes.** Few diseases or conditions can be treated quickly, even with legitimate products. Beware of language such as, "Lose 30 pounds in 30 days," "protects from viral infections," or "eliminates skin cancer in days."
- **"All natural" cure or treatment.** Don't be fooled by descriptions like "all-natural cure." Such phrases are often used in health fraud as an attention-grabber to suggest that a product is safer than conventional treatments. These terms don't necessarily equate to safety. Some plants found in nature (such as poisonous mushrooms) can be harmful or even kill when consumed. Moreover, the FDA has found numerous products promoted as "all-natural" cures or treatments that contain hidden and dangerously high doses of prescription drug ingredients or other active pharmaceutical ingredients.
- **"Miracle cure."** Alarms should go off when you see this claim or others like it such as, "new discovery," "guaranteed results," or "secret ingredient." If a real cure for a serious disease were

FDA-approved, it would be widely reported through the media and prescribed by licensed health professionals—not plastered on advertisements in social media and messaging apps, or buried in websites, print ads, and TV infomercials.

- **Conspiracy theories.** Claims like “This is the cure our government or Big Pharma doesn’t want you to know about” are used to distract consumers from the obvious, common-sense questions about the so-called miracle cure.

(Source FDA: <https://www.fda.gov/consumers/consumer-updates/6-tip-offs-rip-offs-dont-fall-health-fraud-scams>)

Government recognition or approval of a medication or treatment isn’t the ultimate guide to its effectiveness or safety, and what may be discounted in one country may be recognized in another. There are also some things that have been shown to be effective (such as the use of some animal medications to treat humans), that meet with government disapproval not because of a lack of effectiveness, but because of the potential for misuse without proper medical guidance.

Still, it is important to ensure that you are not taken in by slick advertising and unsupported claims when learning about any form of medicine. Always validate sources, be skeptical of grand claims, avoid conspiracy theories and prepper fantasies. Colloidal silver is an example of a product that is popular in alternative medicine, but which may be more myth than medicine. Proponents claim that colloidal silver can be used to ward off bacteria, fungi, and viruses, and that it treats various diseases, such as cancer, HIV, Lyme disease, and diabetes. However, no scientific research supports this, and many in the medical community warn that due to its lack of effectiveness and potential side effects, it’s best to avoid colloidal silver.

Apocalypse Doctor's Library and Recommended Reading List

- A Practical Guide to Prolonged Casualty Care - by Melissa Givens MD, MPH
- Armageddon Medicine: How to be Your Own Doctor in 2012 and Beyond. An Instruction Manual - by Cynthia J Koelker MD
- Armageddon Pharmacy: Herbal Medicine. When The Drugstore Is Closed Paperback – by Jennifer Rader
- Auerbach's Wilderness Medicine 7th Edition - by Paul S. Auerbach MD MS FACEP MFAWM FAAEM
- Ditch Medicine: Advanced Field Procedures for Emergencies - by Hugh Coffee
- Do It Yourself Medicine – by Ragnar Benson
- Doomsday Book of Medicine: What Will You Do When There Are No Doctors or Medicine? 2nd Edition - by Ralph La Guardia MD
- Emergency War Surgery 5th Edition - by Office of The Surgeon General United States Army
- Encyclopedia of Herbal Medicine: 560 Herbs and Remedies for Common Ailments (2023 Update) - by Andrew Chevallier
- Essential Guide to Primary Care Procedures 2nd Edition - by E.J. Mayeaux
- Expedition and Wilderness Medicine - by Gregory Bledsoe, Michael J. Manyak, and David A. Townes
- Herbal Medic: A Green Beret's Guide to Emergency Medical Preparedness and Natural First Aid - by Sam Coffman
- Improvised Medicine: Providing Care in Extreme Environments 2nd Edition - by Kenneth V. Iserson MD
- Merck Manual of Medical Information - by Mark H. Beers

- Primary Anesthesia - by Maurice King
- Primary Surgery Volume One Non-Trauma, 2nd Edition - by Michael Cotton
- Primary Surgery Volume Two Trauma, 2nd Edition - by Michael Cotton
- Remote and Austere Medicine: Field Guide for Practitioners - by Aebhric O'Kelly and Jason Jarvis
- Riot Medicine – by Hakan Geijer
- Survival and Austere Medicine 3rd Edition - by The Remote, Austere, Wilderness and Third World Medicine Discussion Board Moderators
- Survival Gardening: Grow Your Own Emergency Food Supply, from Seed to Root Cellar - by Sam Coffman
- Survival Medicine Handbook: The Essential Guide for When Help is NOT on the Way 4th Edition - by Joseph Alton MD and Amy Alton APRN
- Survival Nurse: Running an Emergency Nursing Station Under Adverse Conditions - by Ragnar Benson
- The Healing Garden: Cultivating and Handcrafting Herbal Remedies – The Complete Guide to Medicinal Plants with 30 Profiles, 70 Recipes, and Photographic Tutorials - by Juliet Blankespoor
- Village Medical Manual 7th Edition: A Guide to Health Care in Developing Countries (Volumes 1 & 2) - by Mary Vanderkooi
- Where There Is No Dentist (2021 Update) - by Murray Dickson
- Where There Is No Doctor: A Village Health Care Handbook - by David Werner, Carol Thuman, and Jane Maxwell

YouTube Video List

Advanced eClinical Training (ACT)

(<https://www.youtube.com/@advancedclinicaltraining>)

American Academy of Emergency Medicine (AAEM)

(<https://www.youtube.com/@AAEMInfo>)

Backcountry Trauma and Improvisation

(<https://www.youtube.com/watch?v=xkBhNEU3RfQ>)

CALPACT Training: Street Medicine

(<https://www.youtube.com/playlist?list=PL87DCA4FB872401E9>)

Combat Medic Essentials

(https://www.youtube.com/playlist?list=PLOv4gE-dhrTDx9_GRexC561f4Lks1oFVn)

Dr Matt & Dr Mike (<https://www.youtube.com/@DrMattDrMike>)

High Altitude Illness: Prevention and Treatment

(<https://www.youtube.com/watch?v=V9imhh0KKhg>)

Hypothermia and Cold Emergencies: Understanding Signs and Symptoms (<https://www.youtube.com/watch?v=KQpPsvFS2XU>)

Infectious Diseases in Low Resource Settings

(<https://www.youtube.com/watch?v=EPu6V2crOYU>)

Inside Us (<https://www.youtube.com/@officialinsideus>)

JJ Medicine (<https://www.youtube.com/@jjmedicine>)

Learn Suture Techniques Course - Dr. Michael Zenn

(https://www.youtube.com/watch?v=Xp465zM2Trw&list=PLxXUXdZQacmu15Vbz4n11DhvT_DQPMjD7)

8 Common Suture Techniques for Skin Closure

(<https://www.youtube.com/watch?v=-ZWUgKiBxfk>)

MedCram - Medical Lectures Explained Clearly

(<https://www.youtube.com/@Medcram>)

Preparing As a Street Medic: Herb First Aid Foundations

(<https://www.youtube.com/watch?v=cK1EQmy-40s>)

PrepMedic (<https://www.youtube.com/@PrepMedic>)

Rhesus Medicine (<https://www.youtube.com/@RhesusMedicine>)

Splinting and Evacuation

(<https://www.youtube.com/watch?v=TKVFGBYCozE>)

Stanford Medicine (<https://www.youtube.com/@StanfordMedicine>)

The Human Path (<https://www.youtube.com/@TheHumanPath>)

Toxic Creatures (<https://www.youtube.com/watch?v=JNZ5a3hSm6k>)

Toxic Plants, Fungi and Herbal Supplements

(https://www.youtube.com/watch?v=8Ofp6TNC_5c)

UofL Internal Medicine Lecture Series

(<https://www.youtube.com/@UofLIM>)

Zero To Finals (<https://www.youtube.com/@ZeroToFinals>)



Guidelines and Protocols

ADULT VITAL SIGNS

Heart Rate/Pulse

60-100

Respirations

12-18

Blood Pressure

120-80

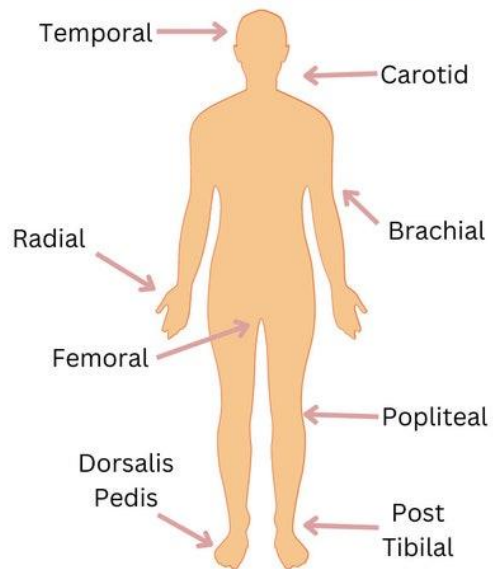
Temperature

97.6-99.6 F

Glucose

70-99

Pulse Locations



Oxygen Saturation

95-100 SpO2

KNOW THE SIGNS OF STROKE

Stroke is an emergency. If you see signs of stroke, CALL 911 and B.E. F.A.S.T

B	E	F	A	S	T
BALANCE	EYES	FACE	ARM	SPEECH	TERRIBLE HEADACHE
					
Sudden loss of balance?	Loss of vision or double vision in one or both eyes?	Face looks uneven?	Arm or leg weak/hanging down?	Speech slurred?	Thunderclap headache?
				Trouble speaking or seem confused?	Worst headache of your life?

COURTESY OF BeFast.org

Emergency Wound Care After a Natural Disaster

The risk for injury during and after a hurricane and other natural disasters is high. Flood waters and standing waters pose various risks, including infectious diseases, chemical hazards and injuries. Prompt first aid can help heal small wounds and prevent infection.

Take care of wounds:

- Wash your hands thoroughly with soap and clean water, if possible.
- Avoid touching the wound with your fingers while treating it (if possible, use disposable gloves).
- Remove obstructive jewelry and clothing from the injured body part.
- Apply direct pressure to any bleeding wound to control bleeding.
- Clean the wound after bleeding has stopped.
 - »» Examine wounds for dirt and foreign objects.
 - »» Gently flood the wound with bottled water or clean running water (if available, saline solution is preferred).
 - »» Gently clean around the wound with soap and clean water.
 - »» Pat dry and apply an adhesive bandage or dry clean cloth.
- Leave unclean wounds, bites and punctures open. Wounds that are not cleaned correctly can trap bacteria and result in infection.
- Provide pain relievers when possible.
- Review the wound every 24 hours.

Seek medical attention as soon as possible if:

- There is a foreign object (soil, wood, metal, or other objects) embedded in the wound;
- A wound is a result of an animal bite;
- A wound is a result of a puncture by a dirty object;
- The wound is infected (pain and soreness, swelling, redness, draining, or you develop a fever);
- You have signs of sepsis such as confusion or disorientation, shortness of breath, high heart rate, fever or shivering, extreme pain or discomfort or clammy or sweaty skin.

Tetanus – If you have wounds, you should be evaluated for a tetanus immunization. If you receive a puncture wound or a wound contaminated with feces, soil, or saliva, have a health care professional determine whether a tetanus booster is necessary based on individual records.

(Source: CDC <https://www.cdc.gov/natural-disasters/communication-resources/emergency-wound-care-after-a-natural-disaster-factsheet.html>)

Wash Your Hands

During an emergency, keeping hands clean can help keep you and others healthy.



Washing hands with soap and clean water is the best way to remove germs that can make you and others sick. If you don't have soap and clean water, use an alcohol-based hand sanitizer that contains at least 60% alcohol.



Stay healthy by washing your hands many times each day:

BEFORE

- preparing food
- eating
- caring for someone who is sick
- treating a cut or a wound

AFTER

- Using the bathroom
- Changing diapers or cleaning a child who has used the toilet
- Blowing your nose, coughing, or sneezing
- Touching an animal, animal feed, or animal waste
- Handling pet food or pet treats
- Touching garbage



What is the right way to wash your hands?

1. Wet your hands with clean running water (warm or cold) and apply soap.
2. Lather your hands by rubbing them together with the soap.
3. Scrub all surfaces of your hands, including the palms, backs, fingers, between your fingers, and under your nails.
4. Keep scrubbing for at least 20 seconds. Need a timer? Hum the "Happy Birthday" song twice.
5. Rinse your hands well under running water.
6. Dry your hands using a clean towel or air-dry them.



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

www.cdc.gov/handwashing

Dakin's Solution

Since 1916, Dakin's solution has been used to kill germs, prevent germ growth in wounds, and control odor, while enabling your body to continue healing. This recipe is a straightforward and economical way to make the amount you need without a prescription or a trip to the pharmacy. Dakin's solution is also known as dilute sodium hypochlorite solution, ranging from full strength (0.5%) to the gentlest so-called quarter percent (0.025%) concentration, which is 1/20 in strength.

Dakin's solution is diluted bleach used to kill germs without hurting a healing wound. Dakin's solution can be made at home or purchased at Walmart, CVS, or Amazon.

Supplies

- Bleach, such as Clorox® (unscented at regular concentration)—NOT concentrated bleach
- Baking Soda
- Water
- Clean pan with lid
- Sterile measuring cup, spoons, and glass jars for storing Dakin's solution

Sterilizing options

- Choose one of the following options to sterilize your tools.
- Sterilize tools by running the dishwasher at the highest settings for hot water and heat
- Wash/boil equipment by hand and air dry, do not use a towel

How to make Dakin's Solution

- Wash your hands with soap and water.
- Measure out 32 ounces (4 cups) of tap water and pour into a clean pan. (Start with extra water as you need 32 ounces after boiling and some water will evaporate during the process.)
- Boil water for 15 minutes with lid on the pan, remove from heat.
- Add ½ teaspoonful of baking soda to the boiled water.
- Measure bleach based on desired solution strength and add it to the water.

	Full Strength	½ Strength	¼ Strength	1/20 Strength
Bleach	3 oz. (or 95 ml)	3 Tbsp + ½ tsp (or 48ml)	1Tbsp + 2 tsp (or 24ml)	1 tsp (or 5 ml)
Water	32 oz.	32 oz.	32 oz.	32 oz.

- Place the solution in a sterile jar. Close the sterile lid tightly.
- Cover the entire jar with aluminum foil to protect it from light
- Label the jar with the date and time you made the solution
- Dakin's solution can be stored for one month at room temperature (sealed and covered)
- Throw away unused Dakin's solution 48 hours after opening jar

Precautions

- Keep out of reach of children
- Do not use Dakin's solution longer than one week, unless directed by your doctor
- Do not use if you are allergic to any of the ingredients
- Stop using the solution if the condition worsens, or a rash or any other reaction develops

Call your doctor if you experience any of the following:

- Increased pain or burning sensation
- Rash or itching
- Redness of skin
- Swelling, hives or blisters
- Signs or symptoms of wound infection

NDC 0436-0946-16



full
strength
0.50%

CENTURY
Pharmaceuticals, Inc.

473ml (16 FL. OZ.)

Drug Facts	
Active Ingredient Sodium Hypochlorite 0.50%	Purpose Antimicrobial
Uses ■ to prevent and treat infection of the skin and tissue. ■ pre and post surgery. ■ cuts, abrasions and skin ulcers.	
Warnings For external use only. Stop use and ask a doctor if redness, irritation, swelling or pain persists or increases. Do not use if sensitive to chlorine compounds. Keep out of reach of children. If swallowed, get medical help or contact a Poison Control Center right away.	
Directions Pour on or apply to affected area. For wound management, use as an irrigant, cleanser or the wetting agent for a wet-to-moist dressing. Apply once daily for lightly to moderately exudative wounds. Apply twice daily for heavily exudative or highly contaminated wounds. Protect surrounding intact skin with a moisture barrier ointment or skin sealant as needed.	
Other Information ■ Store at room temperature (20-25° C / 68-77° F). ■ May bleach clothing. ■ Keep container closed when not using.	
Inactive Ingredients Purified Water, Sodium Bicarbonate, Sodium Hydroxide.	
Questions or Comments? (317) 849-4210 or 1-866-343-2576, Mon-Fri, 9 AM to 4 PM EST Century Pharmaceuticals, Inc. - Indianapolis, IN 46256	



www.dakins.net

How to Make Sugardine

Sugardine is created by mixing granulated sugar with a solution of iodine (such as Betadine) to form a thick paste with a consistency similar to peanut butter. Starting with a quantity of sugar that matches the desired amount of the final product, combine the sugar and iodine in a bowl, gradually adding the iodine until you achieve the paste consistency needed for application to wounds. This usually requires around a 2-to-1 mixture (i.e. 1 cup sugar and 1/2 cup iodine solution).

Studies found that sugardine is effective in treating wounds, burns, and ulcers. *“Over a 56-month period (January 1976 to August 1980), we treated 605 patients for wounds, burns, and ulcers with granulated sugar and povidone-iodine. Rapid healing ensued, due to a reduction in bacterial contamination, rapid debridement of eschar, probable nourishment of surface cells, filling of defects with granulation tissue, and covering of granulation tissue with epithelium. The requirements for skin grafting and antibiotics were greatly reduced, as were hospital costs for wound, burn, and ulcer care.”* (PMID: 7302631)

Sugardine is also a commonly used treatment in animal care, particularly for horses. It is a natural antiseptic that utilizes the antibacterial properties of iodine and pure sugar to help in both preventing and treating infections.

While sugardine can be easily made at home, it is also frequently available for purchase from farm supply stores.

Make Water Safe During an Emergency

After a disaster or emergency, tap water may not be safe to use. Always listen to your local authorities for specific advice.

Use bottled water for drinking, cooking, and brushing teeth if possible. If bottled water is not available, choose one of the following methods to make your water safe.

Water contaminated with harmful chemicals or toxins cannot be made safe by boiling, disinfecting, or filtering.

BOIL

This method will kill bacteria, viruses, and parasites.

Boiling water is the best method.



Boil your water for 1 minute.
At elevations above 6,500 feet, boil for 3 minutes. Let the water cool.

DISINFECT

This method will kill most viruses and bacteria.

Add 8 drops or a little less than 1/8 of a teaspoon of 5%-9% unscented household bleach to 1 gallon water.

For cloudy tap water, use 16 drops or 1/4 teaspoon.

If you don't have household bleach, chlorine dioxide tablets or iodine can be used according to label instructions.



Add bleach to water.

Mix well.

Wait at least 30 minutes before using.

FILTER

This method can remove parasites.

Most portable water filters do not remove bacteria or viruses.

Choose a water filter labeled to remove parasites, and follow manufacturer's instructions. Filtered water might need additional treatment to be safe.



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Learn more:

www.cdc.gov/healthywater/emergency/making-water-safe.html



CDC/4760-A

Water treatment while hiking, camping, and traveling

When visiting places with unknown water quality, you may need to treat water to make sure it's safe to drink. **Boiling water is the most reliable way to kill germs.** If you cannot boil your water, the next best option is to use a filter (especially if water is cloudy) and then use another treatment method. Follow instructions on the treatment product's label, including the contact time for disinfectants. This guide can help you decide which treatment method or combination of methods to use to make your water safe to drink.

TYPE OF GERM	BOIL (for 1 min., or 3 mins. at elevations above 6,500 feet)	FILTER	PURIFIER	CHLORINE TREATMENT (disinfectant)	IODINE (disinfectant)	CHLORINE DIOXIDE (disinfectant)	COMBINING FILTER AND DISINFECTANT	UV LIGHT USED IN CLEAR WATER
BACTERIA (such as <i>Campylobacter</i> , <i>Salmonella</i> , <i>Shigella</i> , <i>E. coli</i>)	✓	✓ 0.3 micron or smaller filter	✓	✓	✓	✓	✓ 0.3 micron or smaller filter, plus disinfectant	✓
VIRUSES (such as norovirus, hepatitis A, enterovirus, rotavirus)	✓	✗	✓	✓	✓	✓	✓	✓
PARASITE <i>Giardia</i>	✓	✓ Filter certified for "cyst" and "oocyst" reduction	✓	!	!	✓	✓ Filter certified for "cyst" and "oocyst" reduction, plus chlorine dioxide	✓
PARASITE <i>Cryptosporidium</i>	✓	✓ Filter certified for "cyst" and "oocyst" reduction	✓	✗	✗	!	✓ Filter certified for "cyst" and "oocyst" reduction, plus chlorine dioxide	✓



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases

Learn more: www.cdc.gov/healthywater/drinking/travel/backcountry_water_treatment.html

✓ **EFFECTIVE**—will remove or kill this type of germ
! **SOMEWHAT EFFECTIVE**—may remove some germs of this type, but water could still be unsafe
✗ **NOT EFFECTIVE**—will not remove or kill this type of germ

C3320288-A

	Method of purification	Volume/ unit or case	Time/ unit-volume	Flow rate	Cost	Effective against					Cube
						Bacteria	Viruses	Protozoa	Chemicals & toxins	Particulate	
Boiling	Thermal	Dependent on container	Boiling once for 3 min, followed by cooling	Dependent on container	none	Yes	Yes	Yes	No	No	Container size
CHLOR-FLOC	Chemical	10L	12–20 min	12–20min/ container	\$21.99	Most	Most	Most	Not specified	Yes*	18g
Potable Aqua tablets	Chemical	22.7L	35 min	35 min/ container	\$7.95	Yes	Yes	Yes*	Not specified	Not specified	85g
Aquamira Water Treatment drops	Chemical	113.6L	15–30 min	15–30 min	\$14.99	Yes	Yes	Yes	Not specified	Not specified	2×28.3g bottles
Steripen FitsAll Filter & Ultralight	Filtration/ UV	20 uses per charge (8000 uses per life)	90 seconds	3L/1.5 min	\$114.90	Yes	Yes	Yes	Not specified	Yes (FitsAll filter)	65g (4×3×4in) & 140g (7×2×1in)
Guardian purifier	Filtration	10,000+L	Instant	2.5L/min	\$350	Yes	Yes	Yes	No	Yes	0.49kg (8×5×3in)

Source: Public domain information and individual manufacturers' claims.

*Not effective against cryptosporidium.

†Forced sedimentation of particulates suggesting filtration through cloth.

UV = ultraviolet.

SODIS

Solar Water Disinfection

SODIS is a cheap method to treat drinking water in your household. Fill clear water into a transparent plastic bottle and expose it to sunlight for 1 day, or 2 days in cloudy weather. The sunlight kills the germs in the water and makes it safe for you to drink!



eawag
aquatic research d.o.c

Sandec
Water and Sanitation in
Developing Countries



SODIS Application



Use a clean plastic bottle that is...

- ✓ transparent
- ✓ 3 litres max.

1



Wash the bottle well the first time you use it

2

Fill the bottle with clear water up to the brim



3

Expose the bottle to sunlight for...

1 full day
in clear
weather



2 consecutive days
in cloudy
weather



4



Enjoy your safe SODIS water!

Contact Information

Kenya Water for Health
Organisation (KWAHO)
P.O. Box 61470, 00200 Nairobi
Phone: +254-20-557550
Email: info@kwaho.org

<http://www.kwaho.org> <http://www.sodis.ch>

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BEFORE PLAN AHEAD (IF YOU CAN) ...



Freeze **containers of water and gel packs** to help keep food cold if the power goes out.



Put **appliance thermometers** in your refrigerator and freezer.

Keep **freezer 0°F** or below

Refrigerator 40°F or below



Freeze refrigerated items such as leftovers, milk, and fresh meat and poultry that you do not need immediately.

Group foods together in the freezer to help food stay colder longer.

If you think power will be out for more than 4 hours, consider moving food to a cooler with ice. If available, buy dry or block ice to keep the refrigerator or freezer cold.



Store non-perishable foods on higher shelves to avoid flood water.

DURING WHILE THE POWER IS OUT ...



Keep the refrigerator and freezer doors **closed** to maintain cold temperature.



IF DOORS STAY CLOSED ...

... a full freezer will hold its temperature for **48 HOURS** if half-full **24 HOURS**

... a fridge will keep food safe for **4 HOURS**

Place perishable foods in a cooler with ice before food starts to go bad

AFTER ONCE THE POWER IS BACK ON ...



Check the temperature inside your refrigerator and freezer. If they're still at safe temperatures, your food should be fine. Discard perishable foods that have been at an unsafe temperature.



Never taste food to **determine its safety!**

WHAT CAN I KEEP?



Hard cheeses (Cheddar, Colby, Swiss, Parmesan, Provolone, Romano)



Grated Parmesan, Romano, or combination (in can or jar)



Butter or margarine



Opened fruit juices



Opened canned fruits



Jelly, relish, taco sauce, mustard, ketchup, olives, pickles



Worcestershire, soy, barbecue, and Hoisin sauces



Peanut butter



Opened vinegar-based dressings



Bread, rolls, cakes, muffins, quick breads, tortillas



Breakfast foods (waffles, pancakes, bagels)



Fruit pies



Fresh mushrooms, herbs, and spices



Uncut raw vegetables and fruit

WHAT SHOULD I THROW OUT?



Raw meat, poultry or seafood products



Soft cheeses and shredded cheeses



Milk, cream, yogurt, and other dairy products



Opened baby formula



Eggs and egg products



Dough, cooked pasta



Leftovers



Cooked or cut produce

WHEN IN DOUBT, THROW IT OUT!

AFTER A FLOOD

FOLLOW THESE STEPS AFTER A FLOOD:



DO NOT EAT any food that may have touched flood water.



DISCARD FOOD not in waterproof containers; screw-caps, snap lids, pull tops, and crimped tops are not waterproof.



DISCARD cardboard juice/milk/baby formula boxes and home canned foods.



DISCARD any damaged cans that have swelling, leakage, punctures, holes, fractures, extensive deep rusting, or crushing/denting severe enough to prevent normal stacking or opening.



SANITIZE
1 tbsp. bleach +
1 gallon water



Pots, pans, dishes and utensils



Undamaged all-metal cans after removing labels

SURVIVAL MEDICINE VOL. 1

BASICS OF DEHYDRATION



Dehydration happens when your body loses more water than it's taking in. Fluid loss is especially prevalent in survival situations where clean water might be scarce and you're more active or exposed to extreme weather. Dehydration in a survival situation is extremely dangerous and can result in irreparable organ damage and death.

RISK FACTORS

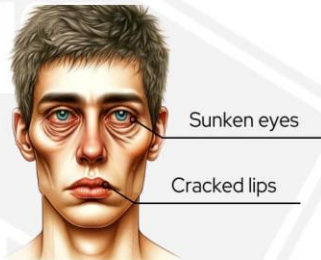
- Physical activity, especially in the unfit
- Elderly and children
- Sun and heat exposure, sweating
- Poor or unreliable fluid intake
- Vomiting and diarrhea (urgent)

IDENTIFYING DEHYDRATION

- Decreased and concentrated urine
- Weakness, dizziness, thirst
- Dry and cracked lips, dry mouth
- Low blood pressure (under 90/60)
- Unconsciousness (emergent)

PREPARE

- Boil questionable water for at least 10 minutes before drinking. Keep firemaking supplies.
- Use water filters like the LifeStraw or Berkey
- Stockpile electrolyte replacement powder (Oral Rehydration Solution)
- Stockpile 1 gallon per person per day (minimum)



PROTECT

- Educate family on extreme importance of hydration.
- Limit physical activity during peak extreme weather. Avoid unnecessary activity.
- Monitor urine output volume in at-risk individuals, measuring if necessary.
 - **Adults:** 0.5-1 mL/kg/hour **Children:** 1-2 mL/kg/hour lbs ÷ 2.2 = kilograms

PROVIDE & PREVAIL

- If the patient is awake but exhibiting signs of dehydration:
 - Immediately initiate oral rehydration (drinking your own urine will not help)
 - Target 6-8oz every 20 minutes until symptoms improve
 - Cease physical activity and seek shade or heat. Sit or lay down.
- If the patient is unconscious:
 - Ensure the individual has a pulse (if not, follow the patients wishes for resuscitation)
 - Initiate emergency rectal rehydration via a clean water enema (very effective)
 - Place the individual on their left side

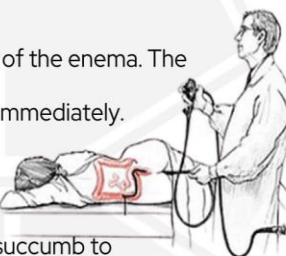
BASICS OF DEHYDRATION



PROVIDE & PREVAIL (CONT.)

- If you have an enema bag in your preps, insert the tip of the enema tube 1.5-2.5 inches into the rectum. Release the tube clamp and apply light pressure to the bag to promote flow. The fluid should be staying in the body.
- If you do not have an enema bag available, consider the urgency of the situation and improvise a way to introduce clean water to the patients rectum.
- 250-750 mL is an appropriate volume if available.
- Keep the patient on their left side to avoid backflow of the enema. The colon will reabsorb the water into the bloodstream.
- When/if the patient reawakens, initiate oral rehydration immediately.

As the medical preparedness expert of your group, have with you a basic medical and vitals kit, including a way to check blood pressure and a pulse oximeter. Water is **the most** critical supply to have in a survival situation. A healthy adult at rest can succumb to dehydration if without water for 3-4 days. In a survival situation, the rate of fluid loss is only magnified.



Be smart about physical activity when water is limited. Avoid travelling long distances or performing demanding physical tasks (like cutting wood) during peak weather conditions. Avoid unnecessary physical activity. Treat the water in your body like currency, expend it only on important feats.

When choosing a wilderness source of water, prioritize fast-moving water over stagnant water. Bring all water to a roaring boil for at least 10 minutes before consuming to ensure maximum bacterial elimination. Utilize 'oral rehydration solution' products, which are electrolyte powders that can be added to water to help replace vital electrolytes lost in perspiration.

Children and elderly are at a higher risk of dehydration. Assess for cracked lips, profound weakness, sunken eyes, uncharacteristically wrinkled skin, or poor skin turgor (pinch the skin on top of the hand and release - tenting can be an indicator of dehydration)



Oral Rehydration Solution (ORS)

Homemade Oral Rehydration Solution Recipes		
Base Beverage	Recipe	
Water	• 4 cups of water • ½ teaspoon table salt • 2 Tablespoons sugar • Optional: Crystal Light® to taste	
Gatorade® G2	• 4 cups Gatorade® G2 (or one, 32 ounce bottle) • ½ teaspoon table salt <i>**if it is too salty, try ½ teaspoon of salt per 32 oz. Some is better than not drinking at all.</i>	
Chicken Broth	Option 1: • 4 cups water • 1 dry chicken broth cube • 2 tablespoons sugar	Option 2: • 2 cups liquid broth (not low sodium!) • 2 cups water • 2 tablespoons sugar
Tomato Juice	• 2 ½ cups plain tomato juice (not V8 or bloody mary mix) • 1 ½ cups water	
Cranberry Juice	• ¾ cup juice • 3 & ¼ cups water • ½ teaspoons table salt	
Cereal-Based	• ½ cup dry baby rice cereal, cooked • 2 cups water • ¼ teaspoon table salt • Combine ingredients. Mix until well dissolved & smooth. Refrigerate. Solution should be thick, but pourable & drinkable.	

Oral rehydration solution (ORS) is a simple solution of salt, sugar, and water that is used to aid in dehydration due to diarrhea. The Centers for Disease Control and Prevention (CDC) recommends ORS when a person is dehydrated.

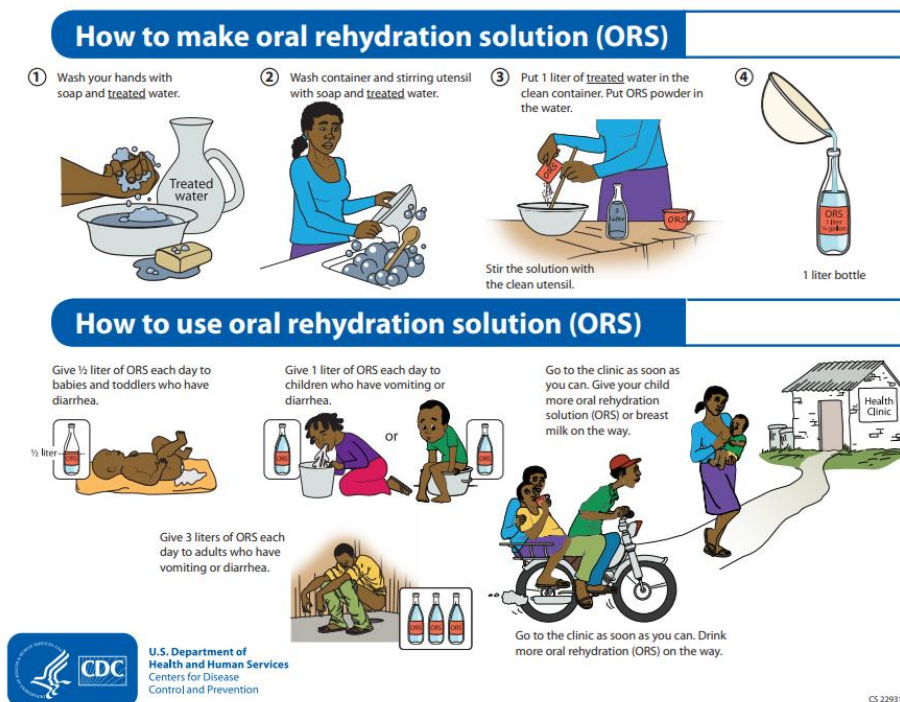
Dehydration happens when your body loses more fluid than you consume. This can happen for many reasons, including excessive diarrhea or vomiting. When left untreated, dehydration can be dangerous. This is because your body relies on water to perform basic functions. Oral rehydration therapy is a treatment for dehydration. It involves drinking a beverage made of water, sugar, and electrolytes, specifically potassium and sodium. The beverage is called an oral rehydration solution (ORS).

World Health Organization ORS Recipe

- 3/8 tsp salt (sodium chloride)
- 1/4 tsp Morton Salt Substitute® (potassium chloride)
- 1/2 tsp baking soda (sodium bicarbonate)
- 2 tbsp + 2 tsp sugar
- Add tap water to make 1 liter
- Optional: NutraSweet or Splenda-based flavoring of choice to taste.

If ORS is not available, water, broth, and/or other fluids can be provided. Drinks with a high sugar content, such as juice or soft drinks, are not recommended because they could worsen diarrhea.

WARNING: When used improperly, an ORS can lead to salt toxicity. This is more likely to happen if you drink an ORS when you don't actually need it.



Bed Bugs

Bed bugs (*Cimex* species) are small, flat insects. Bed bugs bite people and animals at night while they sleep, feeding on their blood.



The size of an adult bedbug compared with a US penny

Bed bugs are reddish-brown in color, are wingless, and range from 1mm to 7mm in size (roughly the size of Lincoln's head on a penny). They can live several months without a blood meal.

Bed bugs are not known to spread diseases to people. However, they cause irritation, itching, and loss of sleep. Removal from dwellings can be expensive and inconvenient to remove.

Although bed bugs are not known to spread diseases to people, they can cause itching and loss of sleep. Sometimes intense itching can lead to excessive scratching and possibly a secondary skin infection. An allergic reaction to several bites is possible. If you think you are having an allergic reaction to bed bug bites, speak with your healthcare provider.

Bed bug bites affect each person differently. Signs of a bed bug bites include

- No physical signs
- Small bite marks
- Serious allergic reactions (rare).

When bed bugs bite, they inject fluids (anesthetic and anticoagulant) that prevents a person from feeling the bite when it

happens. Most people do not notice the bite marks until they appear from one to several days after the initial bite.

Bites look similar to mosquito or flea bites—a slightly swollen and red area that may itch and be irritating. The bite marks may be random or appear in a straight line.

Other symptoms of bed bug bites include insomnia, anxiety, and skin problems that arise from intense scratching of the bites.

Allergic symptoms can include enlarged bite marks, painful swellings at the bite site, and, on rare occasions, anaphylaxis. If you think you are having an allergic reaction to bed bug bites, speak with your healthcare provider.

One of the easiest ways to identify a bed bug infestation is by bite marks on the face, neck, arms, hands, or any other body parts after sleeping. However, these bite marks may take as long as 14 days to develop in some people. It's important to look for other clues to determine if you have an infestation.

Look for

- Exoskeletons (shed after molting),
- Bed bugs in the fold of mattresses and sheets,
- Rusty-colored blood spots on mattresses or nearby furniture, and
- A sweet musty odor.

Kill the Bed Bugs

Heat treatment: You can use a clothes dryer on high heat. You can also use black plastic bags in a hot, closed car in the sun, but success depends on your climate and other factors. Do-it-yourself heat treatments might not work.

Cold treatment may work, but can only be successful in the home environment if the freezer is set to 0o F. Many home refrigerator freezers are not cold enough to kill bed bugs. You must leave the items in a sealed bag in the freezer at 0o for three days. Always use a thermometer to check the temperature, since home freezers are not always set to 0 degrees.

Desiccants (chemicals that dry things out) can be particularly effective in some situations since they work by drying out the bug (which means the bed bugs can't develop resistance). However, they may take several months to work. If using desiccants, be sure to use only products registered by EPA as a Pesticide.

Examples of desiccants include:

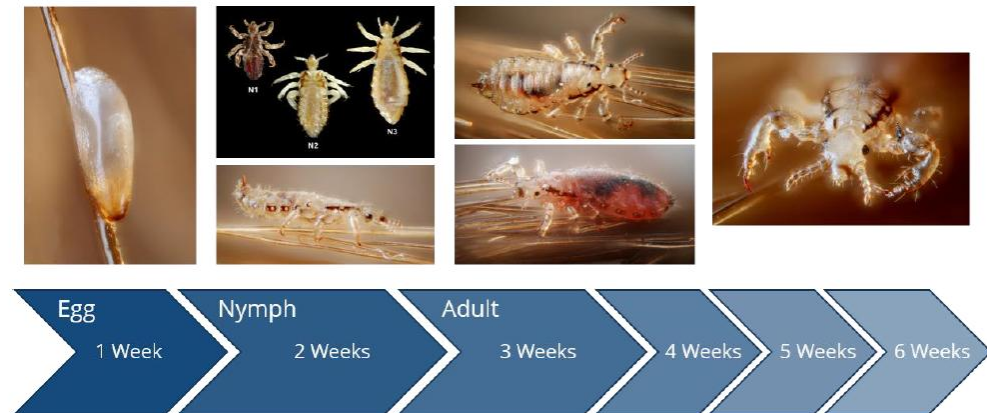
- Diatomaceous earth.
- Boric acid.

When using desiccants to control bed bugs it is critical to use those that are registered by EPA and labeled for bed bug control. Desiccants that are intended for other uses, such as food-grade or for use in swimming pools, pose an increased inhalation risk to people. Use of desiccants is limited to cracks and crevices use only to reduce inhalation risk.

(Source: <https://www.cdc.gov/bed-bugs/> / <https://www.epa.gov/bedbugs>)

Preventing & Treating Lice

Developmental Timeline of Head Lice



What are lice?

Lice are parasites that can be found on people's head and bodies, including the pubic area. Lice survive by feeding on human blood. Lice eggs (nits) are often yellow or white and attach to the hair shaft. They are very small and hard to see. The latter stages of lice are very small insects that can grow to about the size of a sesame seed. They are light or dark brown in color.

What to do if you think you have lice:

- Obtain treatment for infested person(s). This requires using an Over-the-counter (OTC) or prescription medication. Follow the treatment steps listed on box.
- If you are living in a shelter, make sure to inform staff that you may have lice. They may be able to perform a lice check and help you with the next steps.
- To prevent spread, notify shelter, school, household members, camp, etc. and avoid activities that may spread head lice.

Visible nits or crawling lice is the most reliable sign of a lice infestation other symptoms may include:

- Tickling feeling of something moving in the hair.
- Itching on the head and scalp (head lice), body (body lice) and genital area (pubic lice).
- Irritability and difficulty sleeping (head lice are most active in the dark).
- Sores on the skin caused by scratching.
- Intense itching and rash (body lice).
- Thickening and discoloration of the skin if there is a long-term infestation (body lice).

How to prevent lice:

- Avoid contact with people who have lice.
- Avoid sharing personal items like hairbrushes, towels, hats, scarves, coats, and bedding.
- Keep long hair tidy.

Treating head lice:

- Head lice can be treated with a chemical lice treatment and removed manually with a comb. If you aren't sure which medicine to use or how to use a medication, ask your physician, pharmacist or other healthcare provider.
- Chemical lice treatment can be purchased over the counter at pharmacies. Some shelters offer free lice treatments.
- Follow the instructions on the package of the lice treatment. Do not use conditioner or a combination shampoo/conditioner before using the lice treatment. Do not re-wash the hair for 1-2 days after the medicine is removed.

- Use a 'nit comb', or very small comb, to remove lice from the hair shaft.
- Continue checking hair and using a nit comb for 2-3 days after treatment.
- Put on clean clothing after treatment.
- Retreatment may be recommended in 7-9 days, depending on the product.

Treating body & pubic lice:

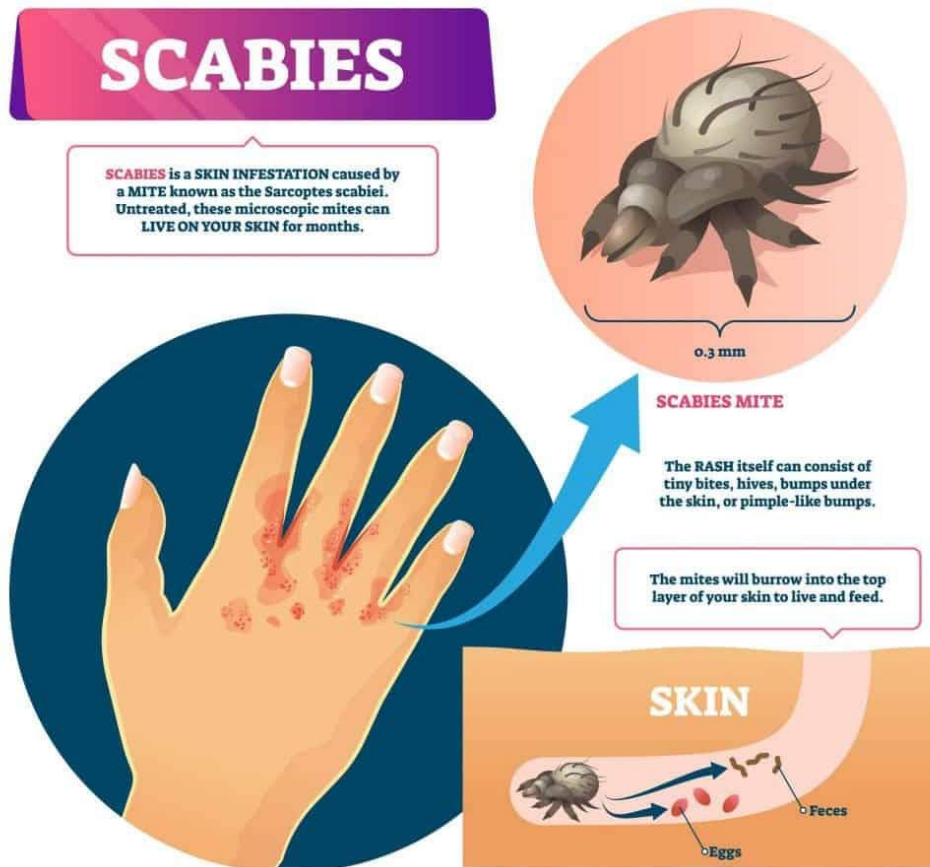
- If possible, take a shower with soap and warm water to dislodge any lice that may be on the body.
- A doctor may be able to prescribe treatment with chemical treatments.
- Follow the directions from the provider or on the package. Always contact a doctor or pharmacist if unsure how to use medicine.

Treating clothing, bedding, & personal items:

- If you have lice, it is important to clean all of your clothing items, bedding, and personal hygiene items to prevent reinfection.
- For clothing and bedding, it is best to wash them in extra-hot water for at least 5 minutes. Dry clothes in a dryer for 30 minutes on the hottest setting.
- If a washer and dryer is not available, leave items in a sealed plastic bag for two weeks.
- Soak combs and brushes in hot water for 5-10 minutes.

(Source: <https://www.cdc.gov/lice/>)

Scabies



Scabies is caused by the human itch mite (*Sarcoptes scabiei* var. *hominis*). The microscopic scabies mite burrows into the upper layer of the skin where it lives and lays its eggs. Scabies can spread quickly under crowded conditions where close body and skin contact is frequent.

The most common symptoms of scabies are intense itching, especially at night, and a pimple-like skin rash. Common areas on body where symptoms occur include:

- between fingers,
- in the skin folds of the wrist, elbow, knee, or armpit, and
- on the penis, nipples, waist, buttocks, and shoulder blades.

You may see tiny burrows on the skin, caused by the female mite tunneling just beneath the surface of the skin.

You can get scabies by

- Direct, extended, skin-to-skin contact with a person who has scabies or
- Less commonly, sharing clothing, towels, or bedding used by an infected person.
- Homeless shelters or encampments.

To prevent the spread of scabies

- Treat other household members with whom you have had direct skin contact or have shared a bed, towels, or clothing at the same time.
- Wash bedding, clothing, and towels in hot water and dry in a hot dryer. Temperatures in excess of 50°C or 122°F for 10 minutes will kill mites and eggs.
- Dry-clean items that can't be washed or seal them in a closed plastic bag for at least 72 hours to a week.
- Avoid skin-to-skin contact with others until treatment is complete.
- Notify people you had direct skin-to-skin contact with during the previous two months and encourage them to seek treatment.

- Scabies mites generally do not survive more than two to three days away from human skin.

Products used to treat scabies (scabicides) kill scabies mites; some also kill mite eggs. Scabicides require a doctor's prescription. No non-prescription products have been tested and approved to treat scabies. Carefully follow the instructions contained in the box or on the label. Scabicide lotion or cream should be applied to all areas of the body from the neck down to the feet and toes.

(Source: <https://www.cdc.gov/scabies/about/>)

Tinea Versicolor



Tinea versicolor is fairly common. It is caused by a type of fungus called *Malassezia* that is commonly found on human skin. The condition is most common in adolescents and young adults. It typically occurs in warm and humid climates. It does not spread person to person.

Applying over-the-counter dandruff shampoo containing selenium sulfide (the primary ingredient in Selsun Blue Shampoo) or ketoconazole to the skin for 10 minutes each day in the shower is a

treatment option. Selenium sulfide an anti-infective agent, relieves itching and flaking of the scalp and removes the dry, scaly particles that are commonly referred to as dandruff or seborrhea, and is also used to treat tinea versicolor, a fungal infection of the skin.

Ring Worm



Ringworm on the skin like athlete's foot (tinea pedis) and jock itch (tinea cruris) are usually treated with non-prescription antifungal medications. Antifungal creams, ointments, lotions, or powders are usually applied to the skin for 2 to 4 weeks.

Ringworm on the scalp usually needs to be treated with prescription antifungal medication taken by mouth for 1 to 3 months. Creams, lotions, or powders don't work for ringworm on the scalp.

(Source: CDC <https://www.cdc.gov/ringworm/treatment/index.html>)

Ticks and Tickborne Disease



Western black-legged ticks can transmit *Borrelia burgdorferi*, the bacteria that causes Lyme disease. It can also transmit the pathogen that causes anaplasmosis. These ticks are mainly found in Western Washington as well as along the eastern slopes of the Cascade Mountains.

- In the United States, ticks can spread bacteria, viruses, and parasites (pathogens) that cause human diseases.
- Many tickborne diseases can have similar signs and symptoms.
- Ticks transmit pathogens that cause disease through the process of feeding.

Many tickborne diseases can have similar signs and symptoms. The most common symptoms of tick-related illnesses include:

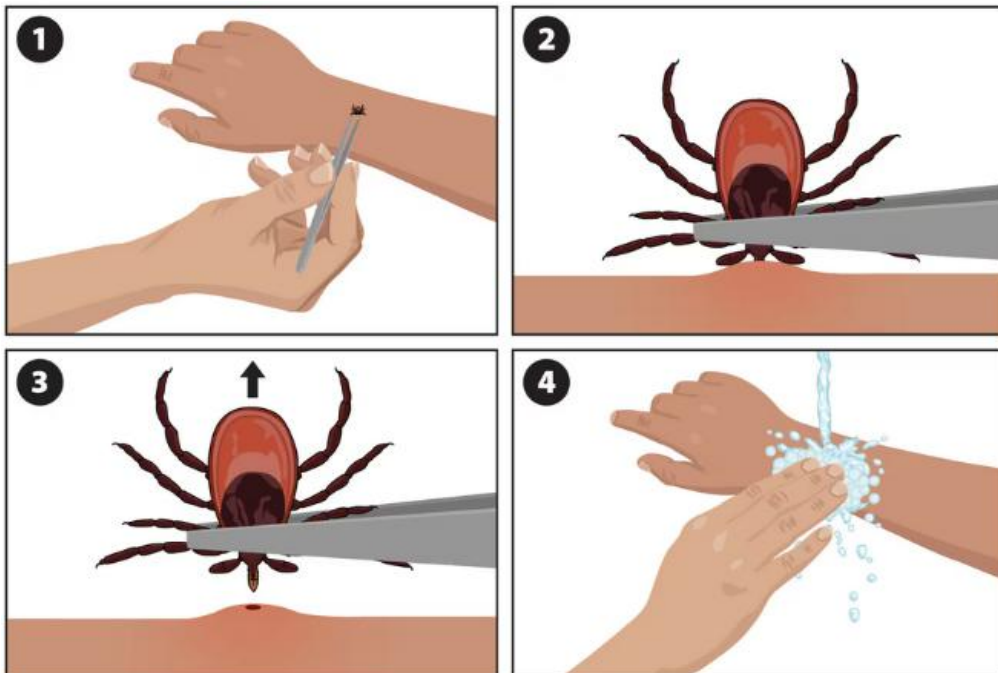
- Fever/chills. All tickborne diseases can cause fever.
- Aches and pains. Tickborne diseases can cause headache, fatigue, and muscle aches. People with Lyme disease may also have joint pain.

- Rash. Lyme disease, Southern tick-associated rash illness (STARI), Rocky Mountain spotted fever (RMSF), ehrlichiosis, and tularemia can cause distinctive rashes.

Ticks find their hosts by detecting animals' breath and body odors, or by sensing body heat, moisture, and vibrations.

Ticks can't fly or jump, but many tick species wait in a position known as "questing". While questing, ticks hold onto leaves and grass by their third and fourth pair of legs. They hold the first pair of legs outstretched, waiting to climb on to the host. When a host brushes the spot where a tick is waiting, it quickly climbs aboard. Some ticks will attach quickly and others will wander, looking for places like the ear, or other areas where the skin is thinner.

How to Remove a Tick

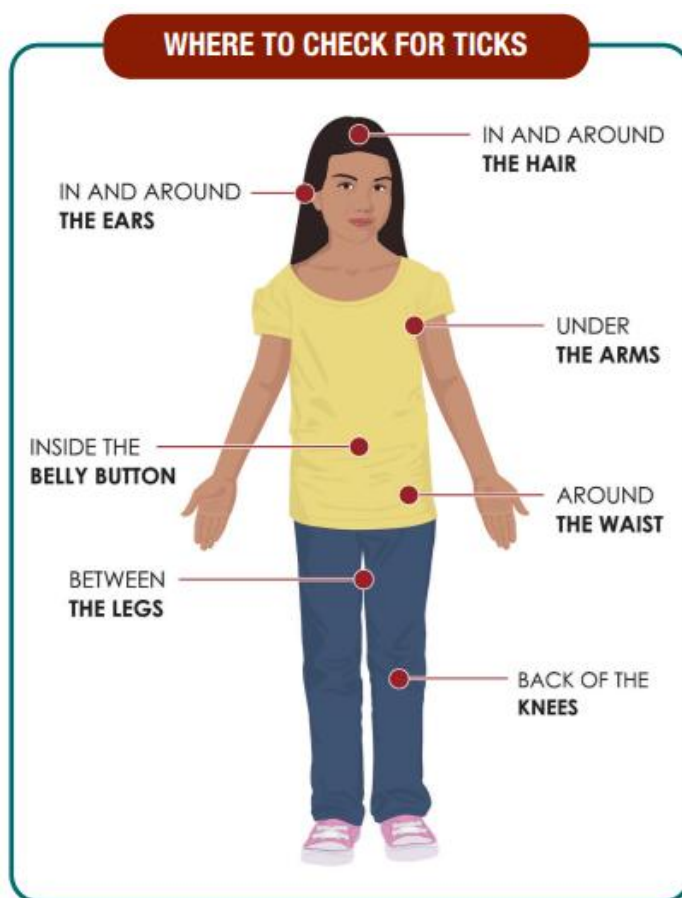


Use clean, fine-tipped tweezers to grasp the tick as close to the skin's surface as possible.

Pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouth-parts with tweezers. If you cannot remove the mouth easily with tweezers, leave it alone and let the skin heal.

After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol or soap and water.

Never crush a tick with your fingers. Dispose of a live tick by putting it in alcohol, placing it in a sealed bag/container, wrapping it tightly in tape, or flushing it down the toilet. (Source: <https://www.cdc.gov/ticks/>)



Rats & Mice



If you see evidence of rodents, set traps throughout your home to catch any rodents that may be inside. Continue trapping until there are no more rodents. If no rodents are captured for a week and there are no new signs of rodents, the rats are gone.

If new droppings (poop), urine spots, or gnawing persist after one week, you may be dealing with a rat infestation. Rats tend to fear anything new. Pre-bait traps (bait the traps without setting them) to help rats feel more comfortable with new objects. They will also learn that traps are a non-dangerous food source. Once you notice the bait is being eaten, you can set the traps.

Traditional snap traps are recommended to reduce rodent populations around the home. Choose the right kind of snap trap for the rodents in your home; there are different traps for mice and rats.



Carefully read the instructions on the box before setting the trap. Place a small amount of bait (chunky peanut butter or mutton fat works best) on the bait pan of the snap trap. Place the trap on the floor against the wall. Put the baited end of the trap next to the wall so it forms a "T" with the wall. Rodents prefer to run next to walls or other objects for safety.

Do not use glue traps and live traps. These traps can scare the rodents, causing them to urinate, which can increase your chance of getting sick.

Place traps in areas where you have seen mice or rats, nesting materials, urine and droppings, nibbled food, or gnaw marks. Place traps in closed areas, such as behind the stove and refrigerator, and in the back of cabinets and drawers. Put traps near other areas where you think rodents are coming into your home, such as attics, basements, crawlspaces, and other areas without regular human traffic. Also place traps in outbuildings and in areas that might likely serve as rodent shelters.

Check traps daily and immediately dispose of any dead rodents. Some rodents, particularly rats, are very cautious and several days may pass before they approach the traps. Pre-baiting traps to get rats

used to the new traps in their environment can help. Other rodents, such as house mice and deer mice, are less cautious and may be trapped more quickly. Reset traps until rodent activity has stopped.

Check the bait every week and re-fill or move it as needed for at least 15 days. Leave the baited traps out longer if you still have mice and rats.

(Source: <https://www.cdc.gov/healthy-pets/rodent-control/trap-up.html>)



Rodent droppings, urine, and saliva can spread by breathing in air or eating food that is contaminated with rodent waste. Diseases are mainly spread to people from rodents when they breathe in contaminated air. Don't vacuum or sweep rodent urine, droppings, or nesting materials. This can cause tiny droplets containing viruses to get into the air.

(Source CDC: <https://www.cdc.gov/healthy-pets/rodent-control/clean-up.html>)

Street Medicine Pocket Guide

Protecting health during encampment sweeps



Before Sweeps

1. Educate patients about street sweeps, what they can expect, & their rights.
2. Proactively develop a relocation plan with patients.
3. Plan for loss of communication.
4. Provide tools to protect critical documents, medications, & other essential resources.
5. Develop “sweep-resilient” medical treatment plans.
6. Increase harm reduction efforts.
7. Provide more basic necessities.
8. Establish communication with relevant authorities to stay informed & advocate for trauma-informed approaches.

During Sweeps - Key Considerations

1. Presence or non-presence during sweeps
2. Engaging (or not) with law enforcement and officials
3. Advocacy for patients: when and how?
4. Providing medical & mental health support
5. Logistical support: to what extent?

After Sweeps

1. Locate displaced patients as quickly as possible.
2. Replenish critical survival supplies, including food, water, & harm reduction supplies.
3. Reestablish medical treatment plans & replace lost medications.
4. Re-establish trust & support patients to process trauma and grief.

Purify the air!



Images from top to bottom: Blueair Blue Pure 511 (\$140), Pure Enrichment PureZone Mini Portable Air Purifier (\$60-80), QT3 portable air purifier (\$80), DIY Corsi-Rosenthal Box (~\$150)

Step 1 is recognizing this is an airborne virus that hangs in the air like smoke and can stay in a room for hours. Poorly ventilated spaces are good for virus transmission..

(United States EPA, 2023)

Risk for CoV-2 infection is 1000 times greater after exposure to airborne virus particles than contact with a contaminated surface.

(Zhang et al., 2022)

Cleaning the air via HEPA filters, a portable air purifier, or simply opening a window to improve air flow is incredibly effective! This works on public transit too.

(Public Health Agency of Canada, 2023)

TIP: Make sure your air purifier isn't the type that uses an ionizer or emits ozone.

One easy and affordable way to make your own air cleaner at home is with a box fan and a furnace filter.

(Puget Sound Clean Air Agency <https://www.pscleanair.gov/694/DIY-Air-Filter>)

What you'll need:



Box fan



20"x20"x1" furnace filter
(MERV 13 or FPR 10)



Optional: Duct tape or bungee
cords

- 1 Place filter on back (air intake side) of fan.



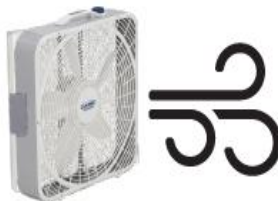
Make sure that the arrow on the side of the filter is pointing towards the fan.

- 2 Use the duct tape or bungee cords to attach the filter securely to the fan.



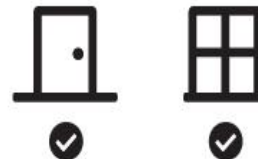
Use tape or cords only around the edges; do not block the air flow through the fan.

- 3 Place in an area away from any obstacles and turn the fan on.



Run the fan on high for a few hours if your indoor air quality is already poor, then turn it to medium to keep it clean.

- 4 Keep all windows and doors closed to prevent new pollution from getting into your home!

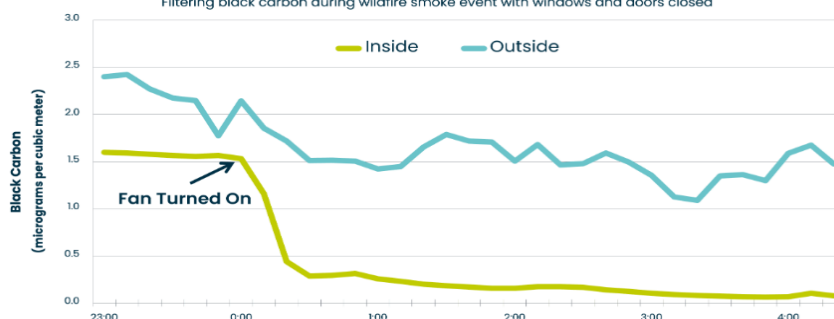


The University of Washington EDGE Center
**Exposures, Diseases,
Genomics & Environment**

Funded by National Institutes of Health grant # P30ES007033 9/2020

Filter Fan Performance

Filtering black carbon during wildfire smoke event with windows and doors closed



The Healer's Oath

I swear by Apollo the Healer, by Asclepius, by Hygieia, by Panacea, and by all the gods and goddesses, making them my witnesses, that I will carry out, according to my ability and judgment, this oath and this indenture.

First, I will do no harm.

I will respect those physicians in whose steps I walk, and freely share such knowledge as is mine with those who are to follow.

I will apply, for the benefit of the sick, all measures that are required, avoiding overtreatment and therapeutic nihilism.

I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.

I will not be ashamed to say "I know not," nor will I fail to call in my colleagues when the skills of another are needed for a patient's recovery.

I will respect the privacy of my patients, for their problems are not disclosed to me that the world may know.

I will remember that I treat a sick human being, whose illness may affect the person's family and economic stability. My responsibility includes these related problems, if I am to care adequately for the sick.

I will prevent disease whenever I can, for prevention is preferable to cure.

I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm.

A Call to Action for America

A collaborative report by: Task Force on National and Homeland Security, Secure the Grid Coalition, and other partners

October 2017

Imagine the following:

Day 1, 3:00 p.m. EST (Noon PST): The power goes out across the entire continental United States. Transformers have blown out everywhere. Within minutes, all 61 commercially operating nuclear power plants across the Nation have “scrammed” (i.e. shutdown) their reactors, which is standard operating procedure during the loss of external electric power. Millions of TVs, laptops and computers have shorted out. Cell phones and landline phones aren’t working. The Internet is down. Smoke is visible from a number of small fires across every community, but very few sirens from fire engines can be heard. Traffic lights are out, and a significant number of cars and trucks that were running are now inoperable and scattered about the roadways. Trains and subways are shutdown. ATMs don’t work, banks close, and Wall Street closes. The Emergency Broadcasting Service and 911 are not operating. First responders are unable to communicate, coordinate or respond, not that they could get anywhere on the clogged roadways. Many of the planes that were in the air have crashed, and those that didn’t must now attempt to land without help from air traffic control or ground radar. No one seems to know what’s going on. By nightfall, most homes, hospitals, and elderly care facilities are without running water. The nighttime sky is pitch black across America, and the stars seem eerily bright overhead.

Days 2-3: There's a run on everything at the stores; those that are open will only accept cash or barter, since debit card readers are non-functioning. There will be no trucks coming to resupply the stores, since canning facilities, distribution centers, and interstate trucking all rely on the electric grid to function. There are long lines at the very few gas stations that have emergency diesel generators powering their pumps. In homes without emergency back-up power, anything remaining in freezers spoils and becomes unsafe to eat.

Days 4-5: Law and order begin to break down. Without communications and functioning electronic equipment, most emergency responders will likely stay home to protect their own families. Stores are looted for anything and everything. Many in the cities begin to evacuate to the suburbs, often by foot, overwhelming the already limited resources there. Emergency back-up diesel generators in most homes run out of fuel.

Days 6-8: Emergency back-up diesel generators run out of fuel at most water and wastewater facilities, radio and TV stations, hospitals, food processing plants and emergency services locations, if they weren't damaged or destroyed on Day One. There will be no tanker trucks coming to refuel. Hospitals are required to evacuate their patients if they are without external electric power for more than 72 hours, except there aren't any hospitals with electric power to evacuate their patients to. By now, there are few doctors, nurses and hospital staff members remaining, because the majority have gone home to protect themselves and their families. Many patients requiring constant care either have died or will die soon. Without firefighters and water pressure, a number of fires that started from a variety of causes, including nature, human error, or arson, burn out of control until there is nothing left to burn. As a result, entire city blocks and many homes

are now in ashes. Without water pressure, there is no clean, safe drinking water available. Without wastewater processing, the situation becomes disgusting and dangerous very quickly as pressurized, raw sewage pours from toilets and sinks in the lowest elevations of the system. This makes millions of homes and apartments uninhabitable due to both the health risks and high levels of methane gas.

Days 9-14: Without law enforcement, the hungry and desperate masses break into their neighbors' homes for food and supplies. Armed groups and gangs roam the streets, preying on the weak and defenseless. Even "good people", if unprepared and forced to survive, do "whatever it takes" to feed their children and keep their loved ones alive. Like first responders, many in the stateside military and National Guard abandon their posts and rush home to protect their own families from the looters. Stateside military bases are 99% reliant on the civilian power grid and are just as "dark" as everywhere else. National Guard Armories around the Nation have been or will soon be looted by well-armed gangs intent on stealing loosely protected military vehicles and hardware. The thin layer of civilized society has begun to slip away in the fight for survival.

Days 14-30: By the end of Day 7, the Nuclear Regulatory Commission's (NRC) mandated diesel fuel supply for back-up emergency diesel generators at most nuclear power plants runs dry. For back-up generators and reactor cooling pumps damaged or destroyed on Day 1, there are two primary, central locations in the U.S. with spares that would need to be transported many miles on clogged highways to their destinations. If reactor plant operators are unable to operate and resupply fuel to back-up diesel generators, and if they are unable to power and operate reactor cooling pumps, reactor cores will eventually overheat and pools for spent fuel rods will eventually boil. If

this is the case, over the next few days to weeks, many of the 61 commercially operating nuclear power plants with 99 nuclear reactors in 30 states (as of 5/30/17) will meltdown, just as the Fukushima nuclear power plant did in Japan following the tsunami of 2013. Based on 2010 Census data, more than 120 million Americans live within 50 miles of a nuclear power plant. Their already bad situation will become far worse as grainy, radioactive debris blows downwind from failed reactor plants. There is nowhere to evacuate to, no one to oversee or coordinate any evacuations, and few methods available to communicate the problem. Adding to the social breakdown, many of the 2.3 million adults in federal and state prisons and county jails across the U.S. escape due to lack of power, resources and manpower to contain them. The first outbreaks of dysentery, cholera and typhoid, all brought on by drinking unpurified water and living in unsanitary conditions, begin to spread throughout the country. These and other treatable third world diseases, along with dehydration, starvation and murder, claim the lives of tens of millions of Americans. There are no hospitals to go to. There are no medications available. Even minor injuries and infections become life threatening. In most parts of the country, there is no one coming to help... and this is just the first 30 days following the grid being down.

Infectious Disease in the TEOTWAWKI World

by Militant Medic

November 2015

Before we start, here's a quick disclaimer: I am a physician who has been practicing for 11 years, so I hope I know what I'm talking about, BUT this information is written for a TEOTWAWKI scenario where routine hospital-based care is unavailable and the only antibiotics you have are ones designed for pets. This article is written for the desperate times ahead. Please do not use it as a guide to infectious diseases or how you should provide care to your family now. If you or a family member is ill and the hospitals are still staffed with knowledgeable and compassionate doctors who have all the great drugs Big Pharma can produce, *that is where you should go for care*. I assume no liability if you use this information in a scenario in which it was not intended. So once again: this article applies to a TEOTWAWKI scenario where all you have is pet antibiotics. It should not be used to guide medical decision-making for any timeframe prior to that event.

So, "it" has hit the fan, but fortunately you had seen the writing on the wall and gotten your act together. You have food, water, shelter, defense, and first aid. You're ready for anything.

Included in your first aid inventory is a good selection of antibiotics, and now the time has come to use them, but your OPSEC wasn't as good as it should be and word has gotten out that you have antibiotics. The people are coming from far and wide. (If you don't think people will travel for medical care, you are wrong. When I did a medical mission in

Honduras, people were walking for 10-20 miles through the jungle to see us; so, it will happen.)

Let's walk through a few scenarios. Here are the "patients" you have waiting in your front yard "waiting room":

1. Your wife has a sore throat without a runny nose or cough. It hurts to swallow. Little red spots are scattered across the back of her mouth, and her tonsils are swollen and beefy red without white spots.
2. Your son cut his hand a few days ago, and now the cut is red, hot, and oozing puss.
3. Your other son also cut his hand while salvaging some stuff from a nursing home. His wound too is red, hot, and oozing puss.
4. Your grandson (who never got his vaccinations, because your son didn't believe the "lies" of big pharma) is having coughing fits that take his breath away and end in a "Whoop" of inhaled air.
5. Your other grandson (again who had no vaccinations) has broken out with a fever, runny nose, and rash that consists of small fluid-filled blisters on bright red spots on his skin. They itch, and when one area gets better another area gets worse.
6. Your third grandson (again who had no vaccinations) has headache, vomiting, muscle aches, a fever of 104.2, and weakness of his left leg muscles. Ten days ago, you chastised him for drinking untreated water from a creek. He didn't know but it was downstream from a big FEMA refugee camp.

7. Your neighbor's wife has a fever, abdominal pain, and vaginal drainage. You know she was raped on a trip to the farmer's market one week ago.
8. A farm hand seemed okay yesterday but woke with a fever to 102.9, chills, coughing, body aches, runny nose, and a headache. His nasal drainage is yellow-green.
9. Your teenaged daughter has not been drinking enough since you ran out of "flavor enhancers" for your water. Now, she has a fever of 101.5, painful urination, urinary frequency, and urinary urgency. Her urine smells "strong".
10. Your prepper neighbor (who has a special filter to remove the fluoride from his city water) has been struggling with a toothache for a few days but now he can barely open his mouth. He has a fever of 102.3, jaw pain, and swelling on the right side of his face. He took some penicillin he had stocked and it seemed to help a little, but then his symptoms got worse.
11. Your neighbor ran out of food a while ago and has been shooting and eating prairie dogs out of desperation. He was okay yesterday but woke in the middle of the night with fever and now has fever to 103.7, headache, chills, muscle aches, and diarrhea. He also says his "glands" are swollen in his neck, armpit, and groin.
12. Another neighbor was out hunting when he drank untreated water from a creek. Upstream he found a beaver pond. He presents with abdominal pain, copious watery (non-bloody) diarrhea, and a fever to 102.2.

13. A boy from down the road was caught looting a house and was hit in the abdomen with three rounds of 00 buckshot as he ran away. He presents with a swollen painful abdomen that is rock hard and fever to 105.6. He is incoherent and having hallucinations. The buckshot is still in his body. His father begs you to save him, and he says he will give you his cherry 1965 Mustang fastback if you do. (If he hadn't spent so much time and money on that car, he might have been able to get some preps of his own and wouldn't have had to resort to looting houses for food.)
14. Your neighbor's son presents with fever, fatigue, headaches, vomiting, and diarrhea, and has been unable to sleep. Dad hoped it was just a virus and would pass, but this morning he had a seizure and the father brings him to you. Two months ago, the child found a bat in their grass in the middle of the day. He picked it up and got bit, but the wound seemed to heal without complication.
15. Your aged mother has had a sore throat, low grade fever of 100.6, and stuffy nose for four days. There are white patches on her tonsils. It hurts a little to eat or drink.
16. A farmer from down the road (whom you don't like very well) tells you he has been trading food for sexual favors from the desperate unprepared women of the nearby town. He says there is an ulcer on the head of his penis. Otherwise, he feels fine. It does not hurt, but he is worried he might have "picked something up from one of those whores!"
17. A coworker has shown up for help. You had talked to him about prepping, and he was on the path when the balloon went up. He

presents with bloating, watery diarrhea that has streaks of blood in it, abdominal pain, and a fever to 104.7. He says the diarrhea smells like horse manure. He also says he recently had a suspected strep throat and took Clindamycin for it. (It's the only antibiotic he had), and while the throat got better, the diarrhea (which he suspected to be from the antibiotic) has been present for nine days now and is getting worse.

18. A neighbor's child has been struggling with an illness for about a few days but over the last 24 hours has worsened significantly. She awoke this morning with a very stiff neck, high fever, severe headache, and severe nausea. She also has broken out with a blotchy purplish rash on her lower extremities that does not go pale (blanch) when you push on it. Father is here begging for help.

19. A neighbor has been ill for about five days. Started with two days of non-bloody vomiting and then evolved into watery non-bloody diarrhea. Had a fever of 101.3 at the beginning of the illness but does not have one now.

20. A neighbor ran out of food a few weeks ago and has been out foraging in the forest. He has pulled a lot of ticks off his body. He presents with fever to 102.5, muscle aches, a headache, and a rash on his thigh that looks like a bullseye with concentric rings of redness.

Wow! Do you have your work cut out for you. They are all coming to you for help. You've got the antibiotics, but which one do you use for each of your "patients". Are these bacterial infections that will respond to antibiotics or will you waste your precious antibiotics treating an untreatable virus? If it is a bacterium, will you pick the right antibiotic

and heal your patient or will you pick the wrong one potentially making your patient worse, while at the same time wasting a precious resource you cannot easily replace.

Understanding how to identify and treat infectious disease is an often-misunderstood subject within the prepper community. Few of us have real medical training, and many of us rely on word of mouth or tradition. Some of us make the mistake of thinking all antibiotics are the same. It is my intention to provide a basic understanding of infectious disease and its treatment.

Bacteria, Virus, Fungi, Parasites, and Prion

Medicine.net defines an infection as “The invasion and multiplication of microorganisms such as bacteria, viruses, and parasites that are not normally present within the body. An infection may cause no symptoms and be subclinical, or it may cause symptoms and be clinically apparent. An infection may remain localized, or it may spread through the blood or lymphatic vessels to become systemic (body-wide). Microorganisms that live naturally in the body are not considered infections. For example, bacteria that normally live within the mouth and intestine are not infections.”

There is a lot there, in that little definition and beyond, that the definition is not even accurate! Germs that normally live in your body *can* cause infections and do frequently. Any woman who has ever had a yeast infection knows this. Yeast is a natural part of a woman’s genital tract. Usually kept in check by the natural competition with other bacteria that live “down there” and by the natural acidity of the genital tract. However, if she takes an antibiotic that kills those competing bacteria, yeast can overgrow leading to a yeast infection. So, we see the definition above is not even right.

First, I would like to present a few definitions we use a lot in medicine that some of you may not be familiar with. (Some of these are not textbook thorough but simplified for our conversation):

- **Germ:** any microorganism in existence. This includes bacteria, virus, parasite, fungi, and prions.
- **Pathogen:** a germ that infects you and makes you sick (i.e. Strep pyogenes, which causes strep throat)
- **Commensal:** a germ that generally lives in or on you but does not make you sick; it doesn't help you either. (For example, staph epidermidis is a germ that lives on your skin but only in very rare cases makes you sick.)
- **Symbiote:** a germ that gains a benefit from living in or on you but that provides a benefit to you in return. A current buzzword for some of these is probiotics. (E. coli live in our intestines where they absorb nutrients but in return secrete Vitamin K– an important clotting factor– that our body absorbs and uses.)

Germs

Now let's gain an understanding of each of the different types of germs. I tried to keep from getting too technical.

Bacteria are single-celled organisms that are prokaryotic (in that they lack a membrane-bound nucleus and other intercellular structures common to more advanced organisms). They are very small, usually no larger than a few micrometers (or 0.0001 inch) and come in a variety of shapes. They are found all over the earth from deep sea vents to the arctic. Obviously, we are most interested in the ones that inhabit or infect humans. We are filled and covered with bacteria, and it is estimated there are 10 times more bacteria on and in us than we

have cells in our body! Most are commensals, which basically mind their own business and help keep more pathogenic bacteria in check through normal mechanisms of competition.

Bacteria can be classified in a number of different ways. Most are beyond the scope of this article. One classification that is helpful to understand is Gram staining. Gram stain is a purple dye that selectively stains cell walls. Gram positive bacteria (which have thick cell walls) stain purple, and Gram negative (which have thin cell walls) stain pink. The two most important Gram-positive bacteria are the Strep and Staph family. An understanding of whether a bacterium is Gram positive or negative is important because many antibiotics are much better at killing one or the other. For example, antibiotics that target cell walls (like the penicillins) are much better against Gram positive bacteria with their thick juicy cell walls than Gram negative with their wimpy unappetizing thin cell walls.

Another classification that is helpful are anaerobic vs. aerobic. Aerobic bacteria can tolerate the presence of oxygen and include Streps, Staphs, Mycoplasma (the cause of tuberculosis), and Enterobacteriaceae (Salmonella, Klebsiella, E. coli, Yersinia (plague), and Shigella). Anaerobic bacteria tolerate oxygen poorly and will not grow well in areas with a lot of oxygen. Some examples of anaerobic bacteria include Clostridium (C. diff, botulism, gas gangrene, and tetanus), Fusobacteria, Corynebacterium (diphtheria). Some antibiotics (like Metronidazole) only work against anaerobic bacteria.

Many of the classic diseases of mankind are caused by bacteria. These include scarlet fever, cholera, tuberculosis, syphilis, anthrax, bubonic plague, tetanus, gangrene, and leprosy.

Almost all bacteria can be killed by one antibiotic or another.

Viruses are small infectious particles (notice I did not say cells) that require a host cell to replicate and reproduce. Viruses come in a wide variety of forms, including plant viruses, animal viruses, and even viruses that infect bacteria and parasites. Viruses are so small they cannot be seen, even with the most powerful light microscopes.

Because they have to “hijack” your cells to divide, all human viruses are considered pathogenic. There are not any viruses that I am aware of that are commensals or symbiotes.

Many famous diseases of mankind are caused by viruses, including smallpox, polio, influenza, herpes, chickenpox, HIV/AIDS, hepatitis A, B, and C, right down to the lowly common cold (Rhinovirus). Viruses have been in the news a lot lately, as they are the cause of Ebola and Avian flu.

To my knowledge, we have discovered treatment for only a few strains of viruses, and I say “treatment” instead of “cure” because the medications we have discovered only slow and weaken the virus as opposed to kill them, but this is better than nothing. The few viruses we can treat are HIV, chickenpox, herpes, hepatitis B and C, and influenza. For all other viruses THERE IS NO TREATMENT.

Understanding this one simple point is really important if you do not want to waste your antibiotics on a viral illness you cannot treat.

Fungi are a large family of eukaryotic organisms, which means they have membrane bound nuclei and other advanced cellular structures. They range in size from single-celled yeasts to very large underground branching structures that create mushrooms when ready to reproduce.

While fungi can be very damaging to plants, only a few bother humans. The pathogenic species are the Dermatophytes (Greek for “Skin

Lovers”, which are the causative agents of ringworm, toenail fungus, athletes’ foot, and jock itch) and Yeasts (which can infect a woman’s genital tract or our skin). There is also a triad of geographically localized fungi that can also make you sick. These are Histoplasmosis (endemic to the Ohio River Valley), Coccidiomycosis (endemic to the central valley of California), and Blastomycosis (endemic to the Great Lakes region). These three usually cause lung disease, due to inhalation of the spores. A bunch of other fungi are less dangerous and generally only cause disease in people with weakened immune systems, like AIDS patients.

There are many good treatments against fungi, and all can be killed by one antifungal or another. Regular antibiotics (used to kill bacteria) do NOTHING against fungus and can actually make them grow more by removing their bacterial competition. (Just ask any woman who has had a yeast infection after a course of antibiotics.)

Parasites are a large family of critters where the parasite benefits from the host, while the host is harmed. While bacteria and viruses are technically parasites for our discussion, we will not consider them as such. We will also not be considering important but largely foreign parasites (like malaria) in our discussion.

We will be focusing on endoparasites (parasites that live in us, like worms) or exoparasites (parasites that live on us, like lice) of the human body. Parasites are multicellular and, in this regard, more closely related to humans than viruses, bacteria, or fungi.

Parasites are an additional concern because many act as vectors in spreading other viral, bacterial, or parasitic illnesses. The classic example is bubonic plague (*Yersinia pestis*), which was spread by

fleas. If you could avoid being parasitized by the flea, you could avoid the plague.

We have good treatments against parasites, but the more closely the parasite resembles a human the more likely the treatment will hurt you as well. Significant side effects are common with many parasite treatments. Like viruses and fungi, parasites are usually unaffected by antibiotics.

Prions are infectious proteins that can cause other proteins to change shape, leading to harmful effects to the host. As they do not contain any genetic material and cannot reproduce in the classical sense, technically they are not living organisms. Prions were not discovered until 1982 and are rare. They are the causative agents of Mad Cow Disease and Kuru. Prion disease is transmitted by eating infected brain and spinal cord tissue. Once acquired there are no treatments and prion disease is universally fatal. So, don't eat brains.

How Do Antibiotics Work?

Before we talk about how antibiotics work, I want to discuss something called Antibiotic Spectrum of Activity. Antibiotics are generally classified as Broad-spectrum, Intermediate- spectrum, or Narrow-spectrum. This refers to how many different types of bacteria the antibiotic can and will kill. I will discuss the spectrum of each of the antibiotics in greater detail below, but in general Broad-spectrum kill a wider variety of bacteria than narrow-spectrum, which kills fewer and more specific bacteria. While some may think "The antibiotic I want to take is the one that always kills the most different kinds of bacteria. Give me the broadest-spectrum you have!", this is a mistake. Remember, most of the bacteria in your body either don't hurt you or they actually help you, and sometimes just their presence keeps other harmful bacteria in

check. Using a broad spectrum, like Clindamycin, to treat strep throat is like taking out a foxhole with a tactical nuke. You kill everything on the battlefield— good guys and bad. While it will cure the strep throat, it will wipe out all your friendly gut bacteria too, leaving you with a case of diarrhea, if you are lucky, and a case of *Clostridium difficile* colitis, if you are not. In general, the only time doctors use broad spectrum antibiotics is when there is not a narrow spectrum that will do the job (Clinda to kill MRSA) or you have a wound that potentially has a lot of different bacteria in it and you want to kill all of them (Augmentin for a dog bite). If you know the bacteria that is causing the problem, use a narrow-spectrum antibiotic that will kill the pathogen and only the pathogen.

WARNING!! Like other meds, many antibiotics can cause unpleasant side effects. If you are lucky, you just get a little loosening of the stools or a mild yeast infection. However, others can cause changes in red or white blood cells or liver or kidney problems. Many can also interact with other medications you might be taking. Before taking any drug, you should read about it and gain an understanding of potential side effects you might experience. This is especially true if you are pregnant or breastfeeding. I have discussed some of the bigger potential complications below, but it is by no means an exhaustive list. Before starting an antibiotic, you will need to evaluate whether the risks are outweighed by the benefits. In some cases, it's easy. "The risk is a rash, but if I don't take it I will die!" Obviously, the benefits outweigh risks in this case. More difficult will be "I have a runny nose. It might be a sinus infection, but it could just be a virus and the only antibiotic I have will likely give me severe diarrhea." This is a harder choice to make.

How Do Antibiotics Work? (continued)

Antibiotics work in a number of different ways, but perhaps it would just be easier to talk about each one individually. I will focus on the pet antibiotics, since these are the ones most of us can stockpile easily. Again, trying to make this as simple as I can, I have omitted many technical details. (A cellular biologist may take exception to what I say, saying “He didn’t even discuss peptidoglycan cross linkages by the DD-transpeptidase enzyme!! Who does he think he is!!??” However, I think most of the prepper army will appreciate omission of the technical fluff.)

Penicillin (Fish-Pen)

Penicillin was the first really effective antibiotic discovered and the starting point from which other antibiotics were developed. The original penicillin worked best if injected, but eventually an oral preparation was developed (called Penicillin VK or phenoxymethylpenicillin potassium), and this is what you get when you buy Fish-Pen.

The penicillin antibiotics are part of the beta-lactam family of antibiotics due to a chemical structure common to these antibiotics called a beta-lactam ring. Other members of the beta-lactam family are the Cephalosporins. Penicillin (and the other beta-lactams) function by deactivating an essential cell wall-building enzyme in the bacteria. With the bacteria unable to repair its cell wall, the cell wall begins to break down and the bacteria literally pops and dies.

Penicillin once treated a wide variety of bacteria, but overuse allowed most bacteria to develop resistance. The most common form of resistance to penicillin is the beta-lactamase enzyme, which cuts the beta-lactam ring, which deactivates the penicillin and renders it

harmless to the bacteria. This caused penicillin's spectrum to become more and more narrow over time as fewer and fewer pathogens responded to it. Today, penicillin is only used as first choice for one infection— strep throat. That's it. Penicillin's spectrum is so narrow (because so many things are resistant to it) that we only use it for one thing— killing *Streptococcus pyogenes*, which is the bacteria that causes strep throat. It can kill a few other bacteria, like *Streptococcus pneumoniae* (a cause of pneumonia) and *Fusobacteria* (a cause of trench mouth and dental abscesses). However, because you don't know if the pneumonia is caused by *S. pneumoniae* or if the dental abscess is caused by *Fusobacteria*, you don't use penicillin first.

Because penicillin selectively targets an enzyme that we humans don't have or need, the side effects of this antibiotic are usually very mild.

Because the spectrum of penicillin has become so narrow, I do not recommend that anyone stock this antibiotic. Other antibiotics are the same price and have more than one use. Continue reading to see which antibiotics to keep on hand for strep throat.

Ampicillin (Fish-Cillin)

Ampicillin was invented by sticking an amino group onto the side of Penicillin. This increased the antibiotic's ability to penetrate into bacteria, which broadened the spectrum of this antibiotic to include some gram-negative bacteria. Like penicillin, it is a beta-lactam antibiotic. Like penicillin, it works by inhibiting cell wall repair leading to bacterial cell death.

It is classified as an intermediate-spectrum antibiotic. While broader in spectrum than penicillin, it is still pretty narrow. It kills the three bacteria penicillin kills plus Group C strep (*enterococcus*) and the gram-

negative bacteria *Haemophilus influenzae*, *Neisseria meningitidis*, and members of the Enterobacteria family (like *Shigella*, *Salmonella*, and *E. coli*).

Because ampicillin selectively targets an enzyme that we humans don't have or need, the side effects of this antibiotic are usually very mild.

Ampicillin is a good first line choice for strep throat, sinus infections, ear infections, some urinary tract infections, and other respiratory infections like pneumonia. Of the available pen beta lactams, it has the best CNS (central nervous system) penetration, and so it is a good choice for meningitis.

Amoxicillin (Fish-Mox)

Amoxicillin is the big brother of Ampicillin and another child of Penicillin. Like Ampicillin, it is made by adding side groups to penicillin. In Amoxicillin's case, one side group broadens its spectrum (making it, like ampicillin, an intermediate-spectrum antibiotic) and another side group increases its absorption from the human gut. Like penicillin, it is a beta-lactam antibiotic. Like penicillin, it works by inhibiting cell wall repair leading to bacterial cell death.

It has the same spectrum as ampicillin, but it also kills *Borrelia* (the causative agent of Lyme disease) and *Moraxella* (a cause of ear and sinus infections) and *Helicobacter pylori* (the cause of bleeding stomach ulcers). Amoxicillin is used for basically the same infections as ampicillin with the addition of being effective against Lyme disease and stomach ulcers.

Because amoxicillin selectively targets an enzyme that we humans don't have or need, the side effects of this antibiotic are usually very mild.

If I had to pick one of the three penicillins to stock, Amoxicillin would be the one. It has a broader spectrum than Penicillin (without being too broad) and is better absorbed from the stomach than Ampicillin.

Cephalexin (Fish-Flex)

Also known as Keflex in the retail world, Cephalexin is a first-generation Cephalosporin. After Penicillin was discovered, mold scientists went looking at other molds to find other antibiotics (a process called bio-prospecting), and it was thus that the Cephalosporins were discovered.

They are closely related to the Penicillins in that they have a beta-lactam ring and act by inhibiting cell wall repair. Like the penicillin family, they are most effective against bacteria with thick cell walls (Gram positive) and are intermediate in spectrum. They are effective against streps (so this is a fine choice against strep throat) and the staphs. However, unlike the penicillins, they are more resistant to bacterial defenses and so work against more and different bacteria. This is especially important for one reason— *Staphylococcus aureus*.

Staph aureus (which I will just call Staph from now on, even though there are many other strains of Staph) is a common and very aggressive bacteria that is the cause of many infections. Staph is found on our skin and in our noses, and as long as it stays there it does not cause many problems. However, if you get a little cut or scratch, staph may get in and make an infection. STAPH IS THE #1 CAUSE OF WOUND INFECTIONS WORLDWIDE. It can cause small abscesses if your immune system gets it walled off fast enough, but if not, you get more severe infections like cellulitis, necrotizing fasciitis, sepsis (infection traveling in the bloodstream), osteomyelitis (infection of the bone), endocarditis (infection of the heart), or meningitis

(infection of the spinal cord). Obviously, many of these can lead to death. Being in the nose (part of the respiratory tract), it can also cause sinusitis and pneumonia. Staph was one of the first bacteria to develop a resistance to the penicillin family of antibiotics. Worldwide today over 80% of Staph strains are immune to penicillin, and in some areas as many as 97% of strains are resistant. However, they are not resistant to Keflex! So, this is an antibiotic you really want to keep on hand.

Keflex is first line for infections by Streps and Staph, including skin abscesses, boils, folliculitis, mastitis, mild cellulitis, impetigo, erysipelas, and strep throat. It can also be used for ear infections, respiratory infections, and UTI's, but it is not the best choice for these infections.

Three important notes: First is that Keflex treats regular Staph aureus, but it *does not* treat Methicillin Resistant Staph Aureus (MRSA). Keep reading to see what antibiotic you will need to treat that. Second is that it does not penetrate into the brain and spinal cord. So, it is a very poor choice for meningitis. Third is it has a fairly short half-life and usually needs to be taken three if not four times a day to get best effect.

Because Keflex selectively targets an enzyme that we humans don't have or need and because it doesn't wipe out all your gram-negative gut bacteria, the side effects of this antibiotic are usually very mild.

In a TEOTWAWKI scenario, I foresee a lot of manual labor and violence. Both of these things lead to cuts, scratches, and puncture wounds, which means a lot of staph infections. This means you will need Keflex.

Ciprofloxacin (Fish-Flox)

Now for something completely different— an antibiotic that isn't a beta-lactam! Ciprofloxacin belongs to the Fluoroquinolone family of antibiotics, which were discovered by accident in the lab by a chemist trying to make malaria medication, but they sure work.

Cipro works by inhibiting bacterial Topoisomerase enzymes, which makes the bacteria unable to reproduce by blocking DNA replication. This works in both gram positive and gram-negative bacteria. Bacterial resistance to Cipro is increasing and spreading, but at this moment in time is still pretty rare.

Cipro is a broad-spectrum antibiotic that kills a wide variety of gram positive and gram-negative bacteria. It kills Staph aureus and Pseudomonas— two bacteria that are resistant to many other antibiotics. Because it is so broad in spectrum, it is not generally recommended for less complex infections where a narrower spectrum antibiotic would work. You don't want to use this for a strep throat or simple skin abscess, if you have Keflex on hand.

Cipro is considered the first line agent for complicated UTI's and kidney infections, bone and joint infections, typhoid, prostatitis, abdominal infections, gonorrhea, plague, and anthrax. It is also frequently used for infections acquired in the hospital where resistances are more likely. It can also be used for sinus infections, community acquired pneumonia, strep throat, or ear infections, but it is generally considered a little too strong for these infections. Most MRSA bacteria will respond to Cipro, but resistance is developing, and there are better choices. Cipro also penetrates the blood brain barrier well and so is a good choice for meningitis.

Like any medication, Cipro is not without potential side effects, and in Cipro's case there is a big one. In fact, it carries a Black Box warning

because of it. Cipro is associated with tendonitis and tendon rupture. The risk is increased if you are over 60 and/or on steroids. It's rare (0.1% chance or one in a thousand), but being on Cipro makes it three times as likely compared to the general population. Also, the tendon that ruptures most often is the Achilles tendon that connects your heel with your leg. So, think long and hard about taking this drug, especially if it is for something less severe. Getting through the wasteland as a cripple will not be easy.

Having Cipro on hand is a good idea, though. It will treat some things nothing else will, but it should not be used frivolously. Other antibiotics will often do the same job with fewer side effects and won't put your tendons at risk.

Doxycycline (Fish-Doxy)

Doxycycline is an antibiotic that is a member of the Tetracycline family of drugs. Like so many other bacteria, the tetracyclines come from a soil fungus and were discovered in the 1940's. Or maybe it's more accurate to say tetracyclines were rediscovered then because bone analysis of Nubian people who lived about 350AD show they ingested tetracycline likely in a locally brewed beer.

The tetracyclines work by binding to and deactivating the ribosomes inside the bacterial cell. Ribosomes are the bacteria's protein factories, and without it they cannot produce the proteins they need to stay alive. Ribosomal deactivation happens in both gram positive and gram-negative bacteria, though sometimes the antibiotic has a little more trouble getting into Gram positive cells with their thicker cell walls. Some bacteria have also developed resistance to the tetracyclines usually by developing a pump that spits the antibiotic out of the cell and thereby protecting the ribosomes on the inside.

As it treats a large number of bacteria, Doxycycline is considered a broad-spectrum antibiotic. Doxycycline is the preferred agent in treating Chlamydia, Rickettsial infections spread by ticks (Typhus and Rocky Mountain Spotted Fever), and Cholera. It will also work against walking pneumonia (caused by *Mycoplasma pneumoniae*, though technically Azithromycin is a better choice but there is no Fish-Azithro), most strains of Gonorrhea, and early Syphilis infections. Doxy will also work against Anthrax, Plague, Tularemia, and Legionnaires disease. While not FDA approved for this, it will also treat Lyme disease. It will also treat sinus infections, pneumonia, and ear infections, but it is generally a second- or third-line choice for these. Doxy is generally a poor choice for the streps and staph, as their thicker cell walls are harder to penetrate.

Unlike most antibiotics, Doxycycline is also active against certain parasites of the protozoal class. It can help prevent malaria and is often used as a prophylactic for people visiting malarial areas. However, it is poor in treating malaria once the disease is already established.

Doxycycline is best taken on an empty stomach, though it can be taken with foods as long as they don't contain calcium (milk), iron (red meats), or aluminum or magnesium (antacids). Calcium, iron, aluminum, and magnesium bind to the antibiotic, decreasing its absorption. Doxycycline should not be taken by children under age 8 or by pregnant women, as it can cause staining of pre-emergent teeth. Unlike Tetracycline, expired Doxycycline does not cause kidney damage.

Trimethoprim-Sulfamethoxazole (Bird-Sulfa)

Trimethoprim-Sulfamethoxazole (a.k.a Bactrim, Septra, or co-trimoxazole and abbreviated as TMP-SMX) is a combination of two different weaker antibiotics that when added together seem to be greater than the sum of their parts. Sulfamethoxazole is a sulfa-based antibiotic that works best against Gram-positive bacteria (like strep and staphs) as well as many anaerobic bacteria. Trimethoprim is a man-made antibiotic that works against aerobic bacteria. They are combined in a ratio of one part Trimethoprim to five parts sulfamethoxazole, so the dosing will often be listed as 80mg/400mg or 160mg/800mg. Both act by disrupting the bacteria's ability to process folate, which stops DNA production and a host of other processes resulting in bacterial cell death.

TMP-SMX is considered a broad-spectrum antibiotic. Trimethoprim-Sulfamethoxazole (TMP-SMX) is not a terribly effective antibiotic, and a lot of people have unpleasant reactions to its use. The worst-case scenario is that TMP-SMX has a known risk of causing Stevens-Johnson Syndrome (SJS). SJS is a life-threatening reaction that causes your skin to peel off your body. Yeah, it's as unpleasant as it sounds. Because of these problems, the use of TMP-SMX declined through the 80's and in some countries, it was even banned.

So why do we use it today? It's four little letters— MRSA. As MRSA (Methycillin-Resistant Staph Aureus) began to spread across the world and began showing up in more and more infections, the medical community began looking for effective treatments. Doctors discovered there are two different types of MRSA. One is more common in hospital settings and is resistant to almost everything and can only be treated with IV antibiotics in the hospital. The other was termed

community acquired Methycillin resistant Staph aureus (CA-MRSA) and only two oral antibiotics were found to kill it on a regular basis. These two antibiotics were TMP-SMX and Clindamycin. And so, TMP-SMX came roaring back into the medical mainstream.

While TMP-SMX is a broad-spectrum antibiotic, cautious use is recommended due to the potential side effects and interactions with other medications. It is a first line agent for CA-MRSA. It is also considered first line for most all urinary tract infections, as it treats the top five causes of UTI's (E.coli, proteus, klebsiella, enterobacter, and staph saprophyticus). It is also the first line agent for cat scratch disease. It will also treat most other streps and staphs, but other antibiotics will do the same with fewer side effects. It can be used for ear infections, pneumonia, chlamydia, gonorrhea, toxoplasmosis, plague, cholera, traveler's diarrhea, and many others. However, once again, there is usually a better choice. Interestingly, it does not do well against strep throat.

Because it can mess with your own folate metabolism, it should not be used in pregnancy.

Metronidazole (Fish-Zole)

Metronidazole(better known under its trade name, Flagyl) is a very interesting and unique antibiotic. Invented in France in the 1950's, it is part of the Nitroimidazole family of antibiotics.

Metronidazole only works after being reduced (a chemistry term for "adding electrons"), and in the case of Metronidazole this reduction only occurs inside Anaerobic bacteria. Because of this, it is not toxic to human cells, which are aerobic. Once reduced, Metronidazole interferes with bacterial DNA replication, making the cell unable to

reproduce or make needed proteins, resulting in cell death.

Metronidazole is considered a broad-spectrum antibiotic.

As you likely figured out, Metronidazole is best against anaerobic bacteria. Most of your gut bacteria and STD's are anaerobes, and so Metronidazole is a good choice for those infections. Metronidazole is also able to kill one of the most resistant bacteria in your gut—*Clostridium difficile*. *Clostridium difficile* (or *C. diff*, as it is often abbreviated) is thought to be present in the intestines of about 5% of the population. *C. diff* usually only causes a problem when all the other gut bacterial have been wiped out by another antibiotic, allowing *C.diff* to overgrow and cause problems. Metronidazole is one of only two antibiotics in common usage that will kill it.

Metronidazole is also interesting because it is one of the few antibacterials that also acts as an anti-protist and anti-helminthic. This means it can kill some parasites. In America, it is often used to treat *Giardia lamblia* (sometimes called Beaver Fever, due to its common presence in water that has been contaminated by beaver feces).

Giardia is an anaerobic waterborne protozoon that causes abdominal pain, bloating, and fever with a watery diarrhea that can last for six weeks or longer). It is also used to treat *Trichomonas vaginalis* (a protozoa that is transmitted through sex and while rarely affecting men can cause a frothy greenish fishy smelling vaginal discharge in women), and *Entamoeba histolytica* (an anaerobic protozoa of the *Amoeba* family that causes amoebic dysentery and amoebic liver abscesses).

Metronidazole is generally considered the first line drug for the protozoal infections noted above, *C. diff* colitis, and infections suspected to be caused by anaerobes (dental abscesses, pelvic

inflammatory disease, bacterial vaginosis, aspiration pneumonia, intra-abdominal infections, lung abscesses, stomach ulcers caused by the bacteria *Helicobacter pylori*, and tetanus. It is a poor choice for treatment of streps and staphs, as they are both aerobic bacteria. Metronidazole penetrates the blood-brain barrier better than any other antibiotic and so is a good choice for meningitis caused by anaerobic bacteria. (Unfortunately, most meningitis cases are caused by aerobes.)

Side effects are common, and many complain of belly aches or a metallic taste in their mouth while taking this drug. You should also not drink alcohol while on this drug, as it interferes with your body's ability to metabolize alcohol and will give you an unpleasant though harmless reaction.

Clindamycin (Fish-Cin)

Clindamycin is a member of the lincosamide family of antibiotics, which were isolated from a member of the *Streptomyces* bacteria family.

Clindamycin works by binding to the ribosome (protein factory) of the bacteria making the bacteria unable to produce the proteins it needs to stay alive.

Clindamycin is a very broad-spectrum antibiotic able to kill a wide variety of both aerobic gram positive (streps and staphs) and anaerobic gram-negative bacteria, but gram-negative aerobes (like *C. diff*) are resistant. While resistance to Clinda is rare, it is increasing. Most strains of CA-MRSA are killed by Clinda, but resistance becomes more common the farther west you travel in the USA.

Clindamycin is the antibiotic most often associated with the development of *C. diff* colitis. Clinda does not kill *C. diff* but does kill all

its competition, allowing it to overgrow, which leads to illness. *C. diff* colitis presents as abdominal pain, initial watery stools that eventually can become bloody, fevers that can reach 105 degrees, and stools that smell like horse manure. There will almost always be a history of the person having recently taken a broad-spectrum antibiotic. Imodium will significantly worsen the symptoms. Treatment is with Metronidazole or a fecal transplant. (Google that, if you dare.)

Clinda is considered a first line agent for skin and soft tissue infections (strep and staphs), pelvic infections, intra-abdominal infections (like peritonitis and diverticulitis), lung infections caused by *Strep pneumo* (lung abscesses, pneumonia, and empyema), bacterial vaginosis, and CA-MRSA.

A Word On Medication Allergies

Medication allergies are something we constantly worry about in the medical community. Lots of people claim to be allergic to this antibiotic or that antibiotic. The antibiotics people are most often allergic to are the penicillins and the sulfa family of antibiotics. Now I understand some people have very significant and real allergies; if you have had hives or other signs of anaphylaxis, you are likely allergic to the antibiotic you had taken just prior to the reaction.

However, many people think they have an allergy because they had a more minor reaction while taking the antibiotic. I can't tell you how many patients I have seen who think they are allergic because they had a rash when they were three years old or the antibiotic upset their stomach one time. This was probably just a non-allergic side effect of the antibiotic or the illness and not a true allergy. An interesting study was recently performed at the Mayo Clinic in Florida. Three hundred

eighty-four people with self-reported penicillin allergy had penicillin allergy testing performed. Guess what? Of those, 94% were negative.

In the modern medical world, allergies to an antibiotic are not that big a deal. There are lots of alternative antibiotics we can use if you are allergic. “Allergic to penicillin? Fine. We’ll use a cephalosporin. Allergic to that, too?! Fine. We will use something else.” However, in a post-apocalyptic scenario, the only antibiotic you may be able to get may be the one you have always thought you were allergic to. Will you take it? It probably depends on how ill you are and how bad the reaction you had to the antibiotic was.

Might I suggest that those of you who think you have an allergy to an antibiotic go see your doctor and have an allergy test BEFORE the SHTF. Then you will know what you are really allergic to and what you aren’t.

Treatment For Specific Diseases

So...maybe you’re feeling a little overwhelmed at this point. Yeah, I know how you feel, but we are not done yet. Again, it is my goal to give you good working knowledge of this topic, practical knowledge that hopefully in the bad times to come can save your life or the lives of your friends and family.

In a modern hospital when we really want to know which antibiotic is best, we get a sample of your blood, urine, spinal fluid, or puss from a wound and grow the bacteria in the lab with a bunch of antibiotics to see which antibiotic kills it best. Then, we start you on that antibiotic in confidence that it will kill the pathogen and get you back to good health.

In the post-apocalyptic scenario, you will have no such luxury. You will be having to play the odds. For instance, the bacteria most commonly isolated from acute ear infections are *Strep pneumoniae* (~55%), *Haemophilus influenza* (~25%), and *Moraxella catarrhalis* (~15%). So you would pick Amoxicillin, since it generally kills all three. However, if it is one of the 2-3% of ear infections caused by *Staph aureus*, you would experience a treatment failure, as Amox does not kill staph. Playing the odds will be the only choice you have without the ability to culture bacteria and test their sensitivities.

Amazon has some of these antibiotics available, though you will have to get some from a veterinary supply or pet store. The PDF recommends which of these nine (actually eight, because I'm not going to consider penicillin for anything) pet antibiotics should be used for each of the listed infections.

- Clinda
- Metro
- Keflex
- Amox
- Doxy
- Cipro
- Bactrim
- Amp

Very specific weight-based dosing is available for kids, and you can look it up if you desire, but usually a good ballpark dose will get the job done. With most of these medications erring on the high side would be better than going too low.

Again, I must stress that this advice is only good for a TEOTWAWKI scenario. The recommendations on this list assume you only have access to the nine (eight) antibiotics listed above, and in many cases I had to recommend an inferior (second or third line) choice because I only had the nine (eight) above to choose from. This is especially true of the more severe infections (peritonitis, osteomyelitis, septic joints, meningitis) that are usually treated in the hospital with IV antibiotics and surgery. In the modern functional world, there may be much better choices for the following infections. So, if you get an infection, go see your doctor, and he will use the most up-to-date research and most modern medications to get you back on your feet.

I'm doing my best to provide good advice for AFTER it all falls apart. I will not be held responsible for any harm caused if you should use this information before that time.

Antibiotic Dosing Recommendations

Antibiotic dosing recommendations - for TEOTWAWKI only

Condition	Preferred Antibiotic and dosing	Alternate
Abscess (puss pocket)		
Dental	I&D plus Clinda 300mg q8 x 7-10 days	Metro 500mg q6 x7-10days
Skin (not MRSA)	I&D plus Keflex 500-1000mg q8 x7 days	Cipro 500mg q8 x7days
Skin (MRSA)	I&D plus Bactrim 160/800 q12 x7 days	Clinda 300mg q8 x7days
Anthrax		
Post Exposure	Cipro 500mg q12 x60 days	Doxy 100mg q12 x60days
Cutaneous	Cipro 500mg q12 x10 days	Doxy 100mg q12 x10days
with Meningitis	(Cipro 500mg q8 + Amp 1000mg q6 + Clinda 900mg q6)x20d then Cipro 500mg q12 x40d (Cipro 500mg q8 + Clinda 900mg q8) x60 days	
Pulmonary	(Metronidazole 750mg q8 + Cipro 500mg q12) x10 days	
Bacteremia (Sepsis)	(Doxy 100mg q12 or Bactrim 160/800 q12) + (Metro 500mg q8 or Clinda 450mg q8)	
Bite (Human or animal)		
Cellulitis (infection under the skin)		
Body (non-MRSA)	Keflex 500mg q6 x7-10 days	Cipro 500mg q8 x7 days
Body (MRSA)	Bactrim 160/800 q12 x7-10 days	Clinda 300mg q8 x7-10 days
Periorbital	Clinda 300mg q8 x10 days	Cipro 500mg q8 x10 days
Orbital	Clinda 450mg q8 x10 days	Cipro 500mg q8 x10 days
Ear infection	Amox 875mg q12 x10 days	Amp 500mg q6 x10 days
Epididymitis (testicle infection)	Doxy 100mg q12 x10 days	Bactrim 160/800 q12 x10 days
Erysipelas	Keflex 500mg q6 x7-10 days	Amox 875mg q12 x7-10 days
Gastric ulcer (H. pylori)	(Amox 1gm q12 + Doxy 100mg q12) x14 days	Metro 500mg q8 + Cipro 500mg q8
Gastroenteritis (stomach infection)		
Bloody Diarrhea	Water + Electrolytes + Cipro 500mg q12 x3 days	Bactrim 160/800 q12 x3 days
C. diff	Metro 500mg q8 x14 days	none
Giardia	Metro 250 q8 x5 days	none
Travelers Diarrhea	Water + Electrolytes + Cipro 500mg q12 x3 days	Bactrim 160/800 q12 x10 days
Watery Diarrhea (Cholera)	Water + Electrolytes + Doxy 300mg once	Cipro 1gm once
Amoebic dysentery	Metro 500mg q8 x10days	none
Impetigo	Neosporin, Tea Tree oil	Keflex 500mg q6 x7 days
Inter-abdominal infections		
Peritonitis	Cipro 500mg q12 x7 days	Metro 500mg q8 x7days
Lymphadenitis		
Cat-scratch	Bactrim 160/800 q12 x7-10 days	Cipro 500mg q12 x7-10 days
non Cat-scratch mild	Keflex 500mg q6 x7 days	Amox 875mg q12 x7 days
non Cat-scratch severe	Clinda 300mg q8 x10 days	Bactrim 160/800 q12 x10 days
Lyme disease	Doxy 100mg q12 x10 days	Amox 500mg q8 x14-21 days
Mastitis (breast infection)		
lactating	Keflex 500mg q6 x10 days	Clinda 300mg q6 x10 days
non-lactating	Clinda 300mg q8 x10 days	Cipro 500mg q12 x10 days
Meningitis (spine infection)	(Cipro 500mg q8 + Amp 1000mg q6)x20d	
Orchitis (testicle infection)	Doxy 100mg q12 x10days	
Osteomyelitis (bone infection)	(Cipro 750mg q12 + Bactrim 160/800 q12) x42 days	
Parotitis (salivary gland infection)	Keflex 500mg q6+ (Metro 500mg q8 or Clinda 600mg q8) x10-14 days	
Plague, bubonic	Doxy 200mg (loading) then 100mg q12 x10 days	Cipro 500mg q12 x10 days

Condition	Preferred Antibiotic and dosing	Alternate
Pneumonia (lung infection)		
Pertussis	Bactrim 160/800 q12 x14 days	Cipro 500mg q12 x14 days
Community Acquired	Amoxicillin 875mg q12 x10 days	Doxy 100mg q12 x10 days
Walking	Doxy 100mg q12 x10 days	Cipro 500mg q12 x10 days
Prostatitis (prostate infection)	Bactrim 160/800 q12 x42 days	Cipro 500mg q12 x42 days
Septic Joint	(Cipro 500mg q12+Clinda 600mg q8) x28 days	Needle drainage may be needed
Sinus infections		
Virus (<12 days)	supportive care (fluids, rest, good food, vitamins)	
Acute (>12 days)	Amoxicillin 875mg q12 x14 days	Doxy 100mg q12 x14
Chronic (>42 days)	Clinda 300mg q8 x24	Metro + Bactrim
Strep throat	Keflex 500mg q12 x10	Amoxicillin 500mg q12 x10
STD's		
Chlamydia	Doxy 100mg q12 x7 days	Cipro 500mg q12 x7 days
Gonorrhea	Doxy 100mg q12 x7 days	Cipro 500mg q12 x7 days
Pelvic Inflamm. Disease	(Doxy 100mg q12 + Clinda 600mg q12) x14 days	Can sub Metro for Clinda
Syphilis	Doxy 100mg q12 x14 days	none
Trichomoniasis	Metro 2000mg once	none
Tetanus	wound debridement + metro 500mg q6 x10 days	Doxy 100mg q12 x10 days
Tick borne illnesses		
Typhus	Doxy 100mg q12 x7 days	none
Rky Mtn Spot Fever	Doxy 100mg q12 x7 days	none
Tularemia	Doxy 100mg q12 x14 days	Cipro 500mg q12 x14 days
UTI		
Routine	Bactrim 160/800 q12 x3 days	Cipro 250mg q12 x3 days
Pyelonephritis	Cipro 500mg q12 x14 days	Bactrim 160/800 q12 x14 days

Some abbreviations you will need to know to understand this table

- q6: every six hours
- q8: every 8 hours
- q12: every 12 hours
- q24: every 24 hours (once daily)
- I&D: incision and drainage of puss (usually used in reference to an abscess). This is a very important step and should not be skipped. Antibiotics have trouble penetrating into the middle of a puss pocket and so if not drained the duration of therapy will need to be doubled or tripled.

Dosing usually follows common sense rules. These doses are for adult patients. If a range is given it should be interpreted as little adult to big adult and/or mild infection vs. more serious infection. Pediatric dosing is also based on size/weight and will usually be between one-fourth the adult dose (babies) to the full adult dose (large teenager).

- *Militant Medic for SurvivalBlog.com*

Let's Treat Some Patients

So...

I have given you a basic understanding of the different pathogens that cause infections in people.

I have given you a basic understanding of the nine different penicillin antibiotics most available to us as preppers.

I have given you the first line and alternate agents (of the nine available to us; remember the hospital might have better ones) to treat a variety of infections you are likely to encounter.

And I gave you a big nasty list of patients needing your help. (Too bad you didn't have better OPSEC.)

So let's treat some patients and get them out of our front yard.

1) Your wife has a sore throat without a runny nose or cough. It hurts to swallow. Little red spots are scattered across the back of her mouth and her tonsils are swollen and beefy red without white spots.

Diagnostic features: a) sore throat WITHOUT runny nose or coughing, and b) little red spots (palatal petechia, which are classic for strep, that are beefy red WITHOUT white patches.

Diagnosis: Strep throat

Treatment: Keflex, Amox, or ampicillin.

2) Your son cut his hand a few days ago while sharpening an ax and now the cut is red, hot, and oozing puss.

Diagnostic features: Trauma with signs of infection (redness, warmth, pain, swelling, puss).

Diagnosis: Cellulitis. Probably not resistant strain.

Treatment: Keflex or Cipro.

3) Your other son also cut his hand while salvaging some stuff from a nursing home. His wound is also red, hot, and oozing puss.

Diagnostic features: Trauma with signs of infection (redness, warmth, pain, swelling with puss).

Diagnosis: Cellulitis. Increased risk for MRSA due to injury happening at nursing home or hospital.

Treatment: Bactrim or Clinda

4) Your grandson (who never got his vaccinations because your son didn't believe the "lies" of big pharma) is having coughing fits that take his breath away and end in a "Whoop" of inhaled air.

Diagnostic features: Paroxysmal cough with "Whoop"

Diagnosis: Whooping cough (pertussis)

Treatment: Bactrim or Cipro. Even with treatment, children will cough for up to three months.

Let's Treat Some Patients (continued)

5) Your other grandson (again with no vaccinations) has broken out with a fever, runny nose, and rash, which consists of small fluid-filled blisters on bright red spots on his skin. They itch and when one area gets better another bunch crop up elsewhere.

Diagnostic features: fluid-filled blisters on red skin occurring in crops, non-vaccinated.

Diagnosis: Chickenpox

Treatment: Viral illness- no cure. Supportive care with spontaneous resolution without complication in 99% of kids (80% of adults).

6) Your third grandson (again with no vaccinations) has headache, vomiting, muscle aches, a fever of 104.2, and weakness of his left leg muscles. Ten days ago you chastised him for drinking untreated water from a creek. He didn't know, but it was downstream from a big FEMA refugee camp.

Diagnostic features: CNS signs (headache, vomiting, muscle weakness), high fever, water contaminated with human waste, non-vaccinated.

Diagnosis: Polio

Treatment: Viral illness- no cure. Illness will either progress to death (2-5%), or he will recover with a permanent weakness of the muscles of the affected nerve pathway.

7) Your neighbor's wife has a fever, abdominal pain, and vaginal drainage. You know she was raped on a trip to the farmers market one week ago.

Diagnostic features: Sexual trauma, unknown pathogen, pain, fever, drainage.

Diagnosis: Pelvic Inflammatory Disease

Treatment: Doxycycline plus (Clindamycin or Metronidazole)

8) A farmhand seemed okay yesterday but woke with a fever to 102.9, chills, coughing, body aches, runny nose, and a headache. His nasal drainage is yellow-green.

Diagnostic features: Rapid onset, fever, coughing, body aches.

Diagnosis: Influenza

Treatment: Viral illness- no cure. Supportive care leads to complete resolution without complications in 80%. If symptoms persist past seven days, consider treating for pneumonia.

9) Your teenaged daughter has not been drinking enough since you ran out of “flavor enhancers” for your water. Now, she has a fever of 101.5, painful urination, urinary frequency, and urinary urgency. Her urine smells “strong”.

Diagnostic features: Inadequate fluid intake. Pain with urination, urgency, frequency. Fever.

Diagnosis: UTI

Treatment: Bactrim or Cipro

10) Your prepper neighbor (who has a special filter to remove the fluoride from his city water) has been struggling with a toothache for a few days, but now he can barely open his mouth. He has a fever of 102.3, jaw pain, and swelling on the right side of his face. He says he can taste a foul drainage from the base of the tooth. He took some penicillin he had stocked, and it seemed to help a little but then his symptoms got worse.

Diagnostic features: toothache that progressed. Facial swelling. Fever, puss, failure to respond to penicillin.

Diagnosis: Dental Abscess

Treatment: I&D plus Clindamycin or Metronidazole

11) Your neighbor ran out of food a while ago and has been shooting and eating prairie dogs out of desperation. He was okay yesterday but woke in the middle of the night with fever and now has fever to 103.7, headache, chills, muscle aches, and diarrhea. He also says his “glands” are swollen in his neck, armpit, and groin. (plague)

Diagnostic features: prairie dog exposure, rapid onset, swollen armpit and groin lymph nodes.

Diagnosis: Bubonic Plague (*Yersinia pestis*)

Treatment: Doxycycline or Cipro. Even with antibiotics, there is an 8-10% mortality rate.

12) Another neighbor was out hunting when he drank untreated water from a creek. Upstream he found a beaver pond. He presents with four days of abdominal pain, copious (8-10 stools daily), watery (non-bloody) diarrhea, and a fever to 102.2.

Diagnostic features: Water contaminated with mammal feces, abdominal pain, frequent watery diarrhea

Diagnosis: *Giardia*

Treatment: Metronidazole (or supportive care; without treatment will resolve spontaneously in up to six weeks)

13) A boy from down the road was caught looting a house and was hit in the abdomen with three rounds of 00 buckshot as he ran away. This was two days ago. He presents with a swollen painful abdomen that is rock hard and fever to 105.6. He is incoherent and having hallucinations. The buckshot is still in his body. His father begs you to save him, and he says he will give you his cherry 1965 Mustang fastback if you do. (If he hadn't spent so much time and money on that

car he might have been able to get some preps of his own and wouldn't have had to resort to looting houses for food.)

Diagnostic features: penetrating abdominal trauma, rigid abdomen, fever

Diagnosis: Peritonitis

Treatment: Cipro or Metronidazole (Regardless of treatment, this child is likely to die. The holes in his intestines will constantly be spilling bacteria into his abdominal cavity; without surgical closure of the intestinal perforations, it is only a matter of time before he dies. Might want to save your antibiotics to use on someone who has a greater chance of recovery. Look up "Triage- Black tag".)

14) Your neighbor's son presents with fever, fatigue, headaches, vomiting, and diarrhea, and has been unable to sleep. Dad hoped it was just a virus and would pass, but this morning he had a seizure and the father brings him to you. Two months ago the child found a bat in their grass in the middle of the day. He picked it up and got bit, but the wound seemed to heal without complication.

Diagnostic features: bite from mammal acting oddly, CNS signs (headache, vomiting, seizure), long incubation time

Diagnosis: Rabies

Treatment: Viral illness- no cure. Supportive care until child dies. 99.9% fatal (only a handful of documented cases of recovery in the history of mankind, and these all required days in the ICU and drugs you don't have).

15) Your aged mother has had a sore throat, low grade fever of 100.6, and stuffy nose for four days. There are white patches on her tonsils. It hurts a little to eat or drink.

Diagnostic features: runny nose and cough. Exudate (white patches).
Brief duration.

Diagnosis: Viral URI (likely Rhinovirus)

Treatment: Viral illness- no cure. Supportive care. If symptoms persist out beyond 12-14 days, consider examining/treating for sinus infection or pneumonia.

16) A farmer from down the road (whom you don't like very well) tells you he has been trading food for sexual favors from the desperate unprepared women of the nearby town. He says there is an ulcer on the head of his penis. Otherwise, he feels fine. It does not hurt, but he is worried he might have "picked something up from one of those whores!"

Diagnostic features: Painless chancre in sexual active adult.

Diagnosis: Syphilis

Treatment: Doxycycline. In the modern world, we would try to track sexual partners and treat them too.

17) A coworker has shown up for help. You had talked to him about prepping, and he was on the path when the balloon went up. He presents with bloating, watery diarrhea that has streaks of blood in it, abdominal pain, and a fever to 104.7. He says the diarrhea smells like horse manure. He also says he recently had a suspected strep throat and took Clindamycin for it (its the only antibiotic he had. While the

throat got better, the diarrhea (which he suspected to be from the antibiotic) has been present for nine days now and is getting worse.

Diagnostic features: bloody diarrhea, abdominal pain, high fever, recent broad spectrum antibiotic use, long duration

Diagnosis: *C. diff* colitis

Treatment: Metronidazole

18) A neighbor's child has been struggling with an illness for a few days but over the last 24 hours has worsened significantly. She awoke this morning with a very stiff neck, high fever, severe headache, and severe nausea. She also has broken out with a blotchy purplish rash on her lower extremities that does not go pale (blanch) when you push on it. Father is here begging for help.

Diagnostic features: stiff neck, high fever, severe headache, purpuric rash

Diagnosis: Meningitis (purpuric rash is classic for *Neisseria meningitidis*)

Treatment: Cipro and Ampicillin (even with treatment with IV antibiotics there is about a 6-8% mortality rate, and even with recovery between 30-50% will have permanent neurological complications with deafness being the most common). In approximate order of greatest CNS penetration to least CNS penetration for your antibiotics: Metronidazole→Cipro→Ampicillin→TMP-SMX→Doxycycline→Clindamycin →Penicillin→Amoxicillin→Keflex.

19) A neighbor has been ill for about five days. Started with two days of non-bloody vomiting and then evolved into watery non-bloody diarrhea. Had a fever of 101.3 at the beginning of the illness but does not have one now.

Diagnostic features: non-bloody vomiting evolving into non-bloody diarrhea, short duration, no fever

Diagnosis: viral gastroenteritis (common causes include Norovirus, Enterovirus, Rotavirus, Astrovirus, and Adenovirus)

Treatment: Viral illness- no cure. Supportive care including fluids to avoid dehydration. Imodium okay as long as the diarrhea is not bloody.

20) A neighbor ran out of food a few weeks ago and has been out foraging in the forest. He has pulled a lot of ticks off his body. He presents with fever to 102.5, muscle aches, a headache, and a rash on his thigh that looks like a bullseye with concentric rings of redness.

Diagnostic features: Bullseye or target lesion, tick exposure, fever, body aches.

Diagnosis: Lyme disease

Treatment: Doxycycline or Amoxicillin

So now you are the hero (except to that one family). You have provided sound medical advice and treated 19 of your 20 patients. Your understanding of the causes of illness and how to treat them using nothing more than pet antibiotics gives you a real skill that can be used in the world you now live in after the TEOTWAWKI event. Whether you use this skill to help just your family or an entire neighborhood is up to you. Also, up to you will be how you “bill” for your services. Your skill and your antibiotics are an incredibly valuable bartering commodity.

Good luck.